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TEACHING and computers®

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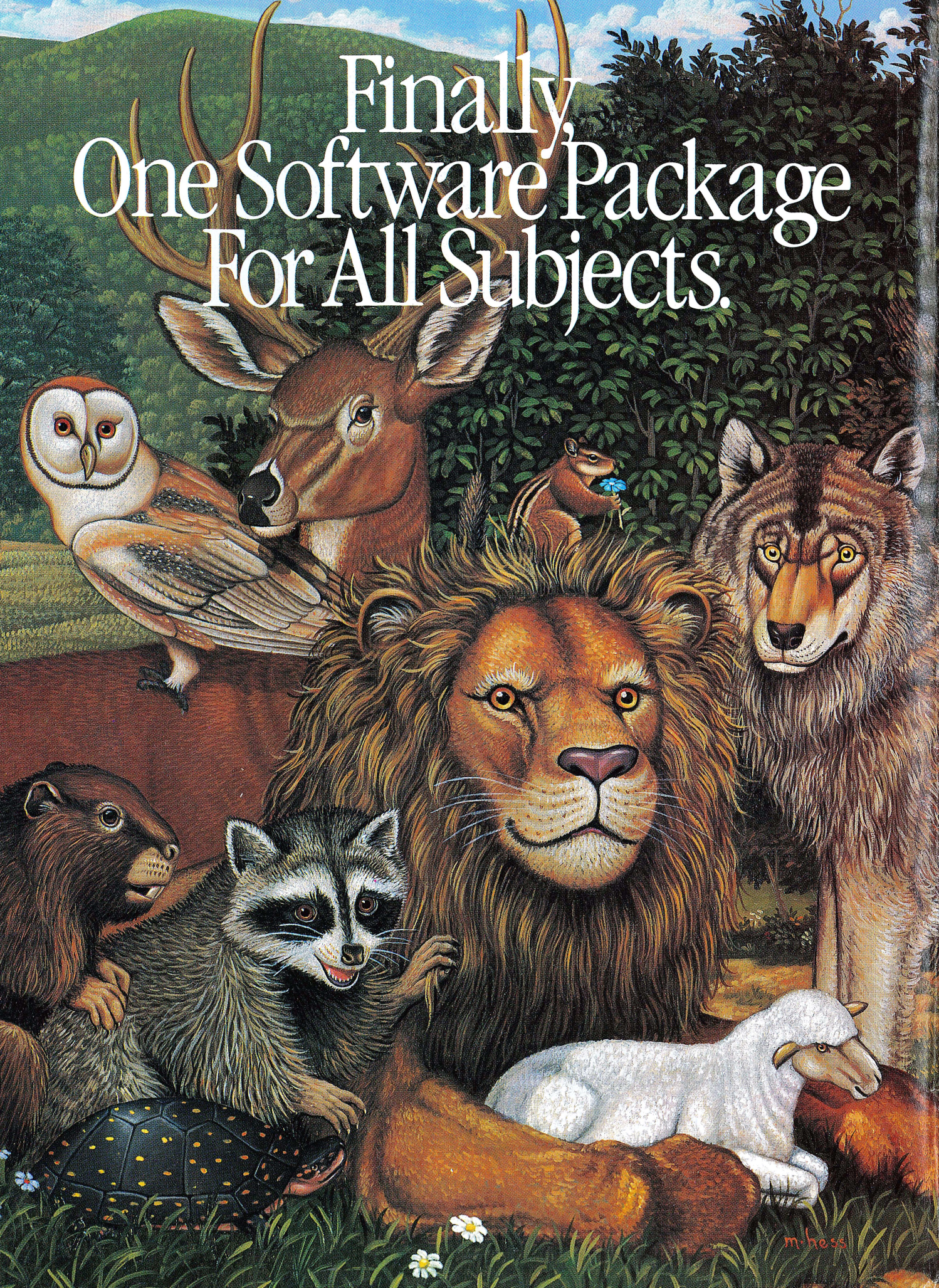
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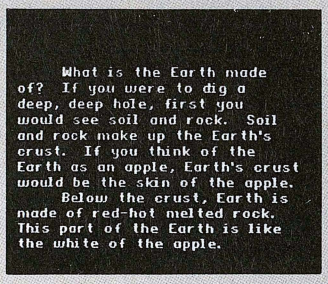

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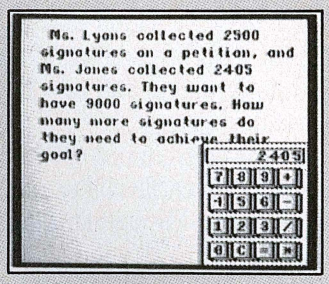

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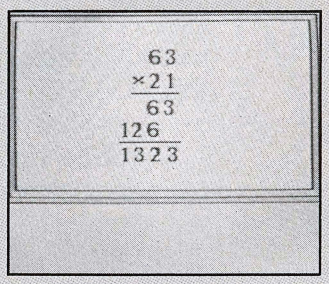

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September 1986 Vol. 4, Issue 1

FEATURES:

13 Worlds of Information
There's a world of information out there waiting to be stored, organized, and analyzed by your students. Help kids take advantage of this wealth of information by introducing them to a powerful tool: the computerized data base.

20 Gold Star Program Listings
Four "solid gold" BASIC listings that are sure to be at the top of your programming hit parade!

38 Turtle Song and Dance
Move over, Gene Kelley! The Logo turtle is warmed up and ready to introduce kids to computer song and dance.

20 First day activities that really shine.

CLASSROOM MATERIALS:

25 T&C's Poster
Computer Input Devices.

25 T&C's Poster Worksheets
Four reproducible worksheets on computer input devices. Worksheet answers are on page 60.

29 "Micro Times"
A four-page mini-magazine for kids who love computers.

42 Writer's Corner
Word processing task cards that help develop descriptive writing skills.

42 Develop a taste for writing.

COLUMNS AND DEPARTMENTS:

6 Update
News for computer-using teachers.

7 Classroom Happenings
What's happening in computer classrooms.

10 Ask the Experts
All about modems in the classroom.

46 First Steps
Computer activities for primary grades.

50 Micro Ideas
Quick computer tips and activities.

52 Tools of the Trade
New and useful computer products.

53 Software Showcase
Software selected for teachers, by teachers.

57 Curriculum Planner
Where to use software in the curriculum.

59 Note to Parents
A send-home note that answers parental queries about computers in your school.

60 Teacher's Helper
Program conversions and worksheet answers.

COVER ILLUSTRATION BY: DOUG JAMIESON

TEACHING AND COMPUTERS® (ISSN 0738-6087) is published eight times during the year; monthly September through April, bimonthly November/December and May/June by Scholastic Inc., 730 Broadway, New York, NY 10003-9538 for $19.95 per year, $11.95 for five or more subscriptions to the same address. Single copy, $3.50. (For Canadian pricing, write our Canadian office, address below.) Second-class postage paid at Monroe, OH 45050-2700 and at additional offices. POSTMASTERS: Send notice of address changes to Office of Publication, TEACHING AND COMPUTERS®, 351 Garver Rd., Box 2700, Monroe, OH 45050-9998. Address subscription correspondence to TEACHING AND COMPUTERS®, P.O. Box 2040, Mahopac, NY 10541. Canadian address: Scholastic-TAB Publications, Ltd., Richmond Hill, Ontario L4C 3G5; in the United Kingdom: Scholastic Publications, Ltd., Westfield Rd., Southam, Leamington Spa, Warwickshire, England DV330JH; in Australia: Ashton Scholastic Pty., Ltd., P.O. Box 579, Gosford, N.S.W. 2250, Australia; and in New Zealand: Ashton Scholastic Ltd., 7-11 Fairfax Ave., Penrose, Auckland 6, New Zealand. Available on microfilm through Xerox University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48106. Also available on microfiche through Bell & Howell Micro Photo Division, Old Mansfield Rd., Wooster, OH 44691. Printed in U.S.A.

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FROM THE EDITOR

March On With Computers!

Three years ago, most elementary teachers knew very little about computers. That's why we started *Teaching and Computers* magazine—to help you and other elementary educators teach about and with computers.

Most of you have come a long way in three years. You now tell us that merely "teaching about and with computers" is not enough. You want to know how to use the computer to teach the skills specifically outlined in your curriculum, and you want to know how to do this in a way that is more effective than any previous method of teaching.

Well, we at *T&C* are ready to meet that challenge! During the past spring and summer, we spoke with computer educators throughout the country. We collected many classroom-tested activities from them, as well as article ideas.

Some of our best ideas came from a meeting we conducted in May with our advisory board members. Our advisers told us that as members of the Information Age, teachers and children alike should begin to experiment with telecommunications. We agreed, and have decided to cover the topic in several different ways this year. We start off by devoting September's entire **Ask the Experts** column (page 10) to the subject. In the column. Jean Tennis, a fifth grade teacher and two-year telecommunications veteran, tells you everything you need to know to set up and use a modem in your school.

Our advisory board members warned us not to overlook computer use in early childhood education. Hence, the birth of **First Steps** (page 46). Each month in this column, Trisha Ainsa, the director of an early education computer project in El Paso, Texas, will share teaching material that she and fellow staffers have developed. This month's column tells how to introduce computer hardware to youngsters in a way that encourages careful handling.

You won't want to miss associate editor Jackie Glasthal's new column, **Writer's Corner** (page 42). Each month in this column, Jackie will provide four activity cards that teach both word processing and creative writing skills.

Our entire September issue is packed with useful, innovative teaching material—short program listings (page 20), worksheets that introduce data bases (page 13), bulletin board ideas (page 49), and Logo activities (page 38). We're determined to make this a banner year for computer learning! In fact, that's the reason for the computer parade on the cover of this issue. We are ready to march on with computers!

Mary Dalheim

T&C *advisers and editorial staffers. Bottom, left to right: Beth Lazerick, computer coordinator, New York City; Ann Dana, computer specialist, Illinois; associate editors Lorri Hopping and Jackie Glasthal. Top: editor Mary Dalheim; Steve Tipps, education professor, Texas; Eydie Sloane, computer consultant for special populations, Florida; production editor Kris Meyer; Tom Lough, editor* National Logo Exchange.

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PUBLISHED BY SCHOLASTIC INC.

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EDITORIAL

Offices: 730 Broadway, New York, NY 10003
Editor: Mary Dalheim
Associate Editors:
Lorraine Hopping, Jackie Glasthal
Production Editor: Kristan Meyer
Editorial Intern: Celeste Smith
Contributing Editors:
Sandra Markle, Shiela Swett
Art Director: Shelley LaRoche
Artist: John Yakicic

Editorial Director, *Teaching and Computers; Electronic Learning:* Jack L. Roberts

PUBLISHING/ADVERTISING

Associate Publisher: Robert Burroughs
Eastern Representative: Deborah A. McGuinness
New York Office: 730 Broadway, New York, NY 10003, (212) 505-3486
Midwest Manager: Ray Barnes
Midwestern Representative: Brian Barnhart
Chicago Office: 400 N. Michigan Ave., Chicago, IL 60611, (312) 467-6888
West Coast Office: John Sabo, John Sabo Associates, P.O. Box 3085, Redondo Beach, CA 90277, (213) 379-8455
Advertising Production Coordinator:
Renee Torres
Special Projects Manager:
Corona Gray-Moore, (212) 505-3485

SCHOLASTIC MAGAZINES FOR TEACHERS GROUP

Publisher: Shirrel Rhoades
Director, Product Production:
J. G. Brownell
Manager, Production Operations:
Gay Siccardi
Business Manager: Robert Bellone
Circulation Director: Terry Perkins
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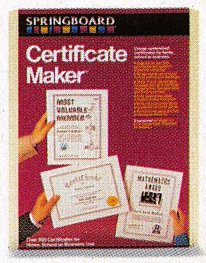

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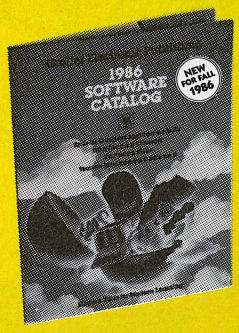

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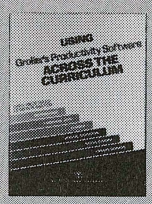

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UPDATE

NEWS FOR COMPUTER-USING TEACHERS

COMPUTER MATERIALS FOR SPECIAL ED

Intelligent Systems Corporation and Dunamis Inc. have donated computer keyboards specially designed for handicapped children, along with related software, to six states with special education resource centers.

The specially designed keyboard, called a PowerPad, is a 12" X 12" touch sensitive device that connects to Apple II series, Commodore 64, IBM PC, and Atari 400/800 computers. Its colorful surface makes it easy for children to locate letters and numbers on the keyboard. The related software includes learn-to-read programs and other activities useful to children at any level.

Special education resource centers in Florida, Ohio, Iowa, Minnesota, and Pennsylvania, as well schools in Georgia now have complimentary Powerpads. Four more states are under consideration to receive free equipment.

The PowerPad costs $100. Accompanying software ranges from $25 to $300 in price.

For more information about the PowerPad, or the learning center nearest you that has this equipment, contact Dunamis Inc., 2856 Buford Highway, Duluth, GA 30136; 404/476-4934.

"TWIST-A-PLOT" CONTEST

Apple Computer Club members in grades two through eight, who are users of "Twist-A-Plot" software, (found in Scholastic's *Microzine* series) are eligible to enter a new contest.

To participate, children submit either an ending to a Twist-A-Plot adventure or an original board game, cartoon, computer graphics program, poster, picture, or picture book based on any Twist-A-Plot program that has been published.

Submissions are judged on attractiveness, creativity, and accuracy in depicting the adventure. The deadline for entry is November 15, 1986.

Twelve winners in grades two through four, and 12 in grades five through eight, will win prizes ranging from a one-year subscription to *Microzine* software to $15 worth of Apple Computer Club merchandise.

For a contest entry kit and club membership information, contact Apple Computer Clubs International, *Microzine* Contest, 175 Middlesex Turnpike, Redford, MA 01730; 800/343-1425.

PBS SERIES OFFERS FREE SCIENCE SOFTWARE

Newton's Apple, the middle school science series broadcast on the Public Broadcasting System, is introducing its own line of free software. The software is designed to be used in conjunction with the series' new season of programs, which begin on October 18.

The entire package is compatible with Apple and TRS-80 computers, and covers topics such as mirrors, telescopes, and laws of probability.

Educators can access the software for free via on-line computer services, including CompuServe and the Source, as well as through local computer bulletin boards. Teachers can also duplicate the software at no cost at many computer user group locations and local board of education computer resource centers.

For more information, contact either the middle school science chairman in your district, or your local Apple Computer Users group.

COMPUTER TRADE-INS FOR SCHOOLS

Apple Computer is offering schools a chance to trade in used computer equipment for credit toward buying new Apple IIe, IIc, or Macintosh personal computers. Equipment that schools can trade in includes Apple II, II plus, III; IBM PCjr; Tandy II, III, and IV, as well as selected Commodore computer systems. A minimum of five new Apple computers must be ordered by participating schools. Credit of up to $250 per system can be received, based on the model and configuration of the trade-in. The offer is good through December 1986.

For more information, contact Apple Computer Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010. ■

CLASSROOM HAPPENINGS

WHAT'S HAPPENING IN COMPUTER CLASSROOMS

THE SOFTWARE EXPRESS

If good software is what drives the educational computing engine, then the Software Express is just the ticket educators in Kansas City, Missouri, need to get on track.

The Software Express is a software collection that moves by car, van, or truck from one Kansas City school to another. It contains more than 1,000 educational computer programs that teachers can review while the Express visits their school. The Express is operated by former teachers who are highly knowledgeable about software trends and who believe educators need a chance to try software firsthand before they make purchasing decisions. The software itself is donated by software publishers who hope to entice teachers to buy the programs.

Members of the Software Express prepare for a trip to one of its scheduled stops.

For more information about the Software Express, contact The Learning Exchange, 2720 Walnut, Kansas City, MO 64108; 816/471-0455.

Dalene Bradford
Kansas City, MO

A ONE-IN-A-MILLION PROGRAM

Fourth graders at the Green Street School in Brattleboro, Vermont, came up with a one-in-a-million idea.

After seeing an illustration of 100,000 tiny stars in the children's book, *How Much Is a Million?* by David M. Schwartz (Lothrop, Lee, & Shepard Books), the schoolchildren developed a short BASIC program on their Apple computer that printed out one million asterisks (stars). The printout, too long to be hung in a classroom, is displayed in the school's corridor.

The book, *How Much Is a Million?*, is designed to help young readers understand concepts behind enormous numbers like 100,000 and one million. With the program they created, Green Street School students can understand how much one million is by seeing it for themselves.

Want to become a "millionaire" yourself? You'll need about 200 sheets of computer paper, and an hour to print this program:

```
10 FOR X = 1 TO 1000000
20 PRINT "*";
30 NEXT X
40 END
```

OF DOGS AND DATA BASES

Members of the Worcester Country School's Apple Computer Club, in Berlin, Maryland, had never taken first place in a computer club competition. At least, not until 11-year-old Aaron Mumford lost his dog last September.

When Aaron realized his pet was missing, he called on fellow computer club members to help in the search. The children used *Print Shop* software to create posters that described the animal. Then they distributed the posters throughout the neighborhood. No luck anywhere. Aaron's dog was never found.

Even so, interest in stray pets grew in Berlin. With the help of local chapters of the Humane Society and the Audubon Club, Aaron and his friends organized a computerized data base that identified Humane Society animals available for adoption.

In addition to classifying these local animals, members of the Audubon Society helped the children classify birds nesting in the area. They established a computerized data base that identified the birds by name, color, and other categories. A separate data base listed books in the school library that contained information about these birds.

The students used a word processor and other computer software to create newsletters and worksheets about their work.

When the time came to enter Apple Computer Club's third annual merit competition, students at the Worcester Country School had completed the data bases and decided to enter them in the contest. Their entry took first place in the Elementary Community Service category. The kids received a congratulatory letter from President Reagan, and an all-expense paid trip to Washington, D.C.

The students from Berlin are not resting on their laurels. As soon as they returned, they began work on next year's entry!

To learn more about Berlin's animal adoption data base, contact Merle Marsh, Country Apple Computer Club, Worcester Country School, Box 106, Berlin, MD 21811; 301/641-3575. To find out about forming an Apple Computer Club, or about next year's competition, contact John Marvelle, director, Apple Computer Clubs International, 175 Middlesex Turnpike, Bedford, MA 01730; 800/343-1425.

BY CELESTE E. SMITH

Seven New Computer-Based Products To Help K-8 Teachers Use the Computer In the Curriculum.

Here, at last, are the classroom computer products that so many teachers have been asking for.

Products that will help you teach social studies, science, language arts, math—and not just computer skills.

Products packed with lessons that students can do on their own; others that you can complete in 15 or 20 minutes; still others that knit seamlessly into your existing curriculum plans to help you use the computer more effectively.

The costs are low, the variety is tremendous, and the excitement of teaching with the help of a computer is all yours. From the pages of the #1 classroom computer magazine for K-8: *Teaching and Computers.*

Computer Poster Pack

Grades K-8

8 colorful computer-awareness wall posters (16 × 22), each with reproducible worksheets that reinforce concepts taught on the posters: computer history, parts of the computer, the keyboard, BASIC programming, Logo, and more. Teaching Guide includes worksheet answers and suggestions for additional activities. Reprinted from *Teaching and Computers* magazine.

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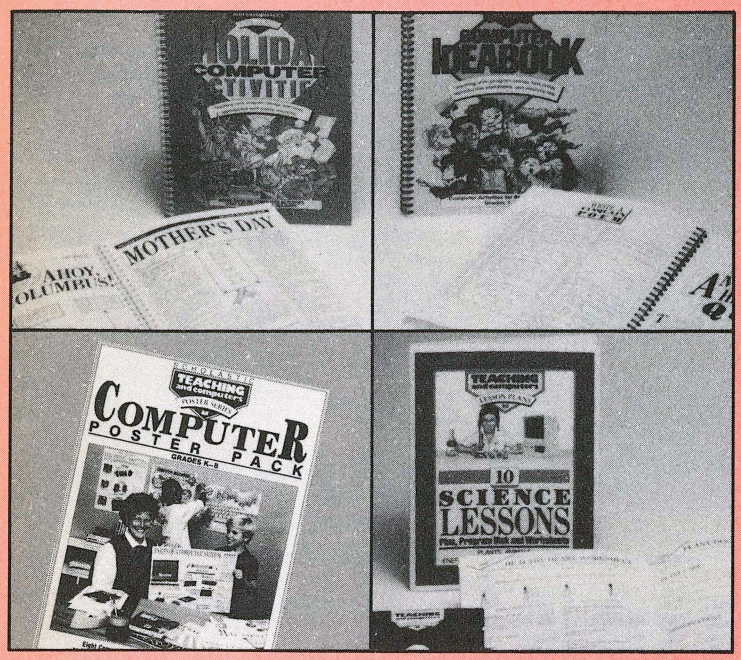
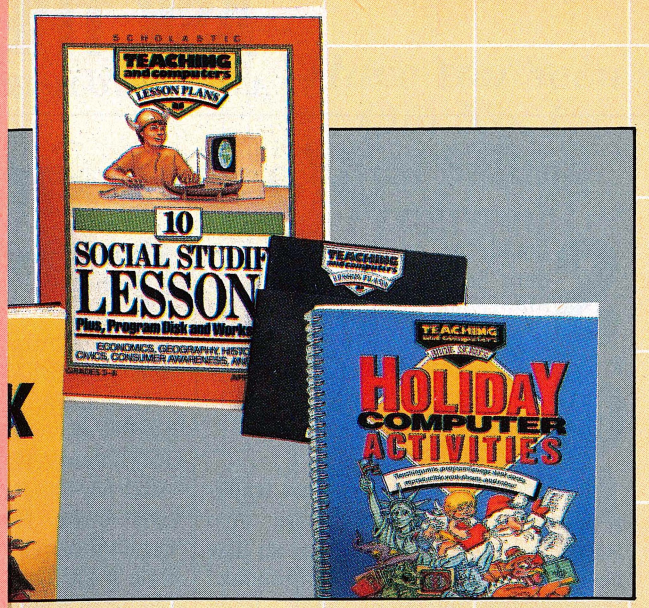


Easy-to-use, ready-to-use classroom ideas, reprinted from the pages of *Teaching and Computers* magazine.



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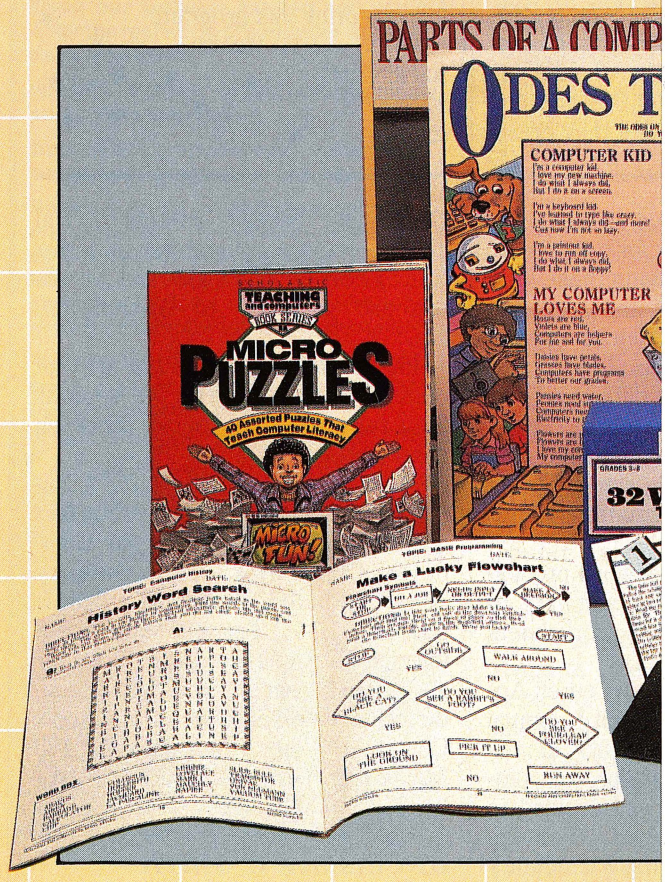

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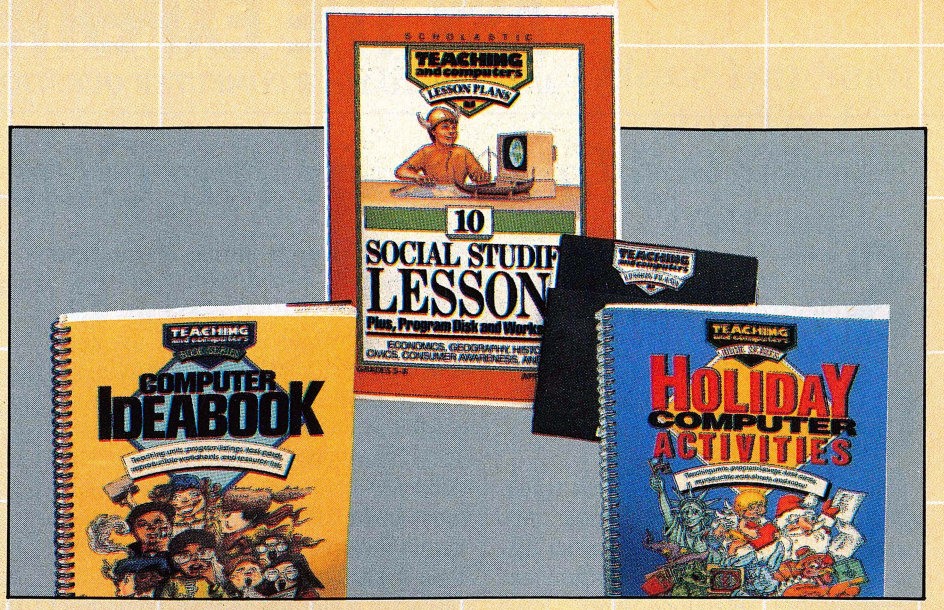

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ASK THE EXPERTS

ANSWERS TO YOUR COMPUTER QUESTIONS

Modems in the Classroom

Should the purchase of a modem be your next venture in electronic education? The questions and answers that follow may help you decide.

Q What is a modem?

A A modem is a device that translates computer signals into sound waves, and vice versa, so that two computers can communicate through the telephone lines. Each computer must be hooked up to its own modem. The word "modem" is an acronym for "modulator/demodulator."

Q What is a *baud rate*?

A The speed at which a modem sends or receives data is called its *baud rate*. The most common speeds are 300 and 1200 baud, or bits per second. A 300-baud modem transmits slightly more than 300 words (a little more than a typewritten page) a minute. A 1200-baud modem is naturally faster (four times) and more expensive, and will also operate at 300 baud. When you communicate with another computer, both modems must be set at the same baud rate.

Q To communicate with someone via modem, do both parties need the same kind of computer?

A No. Apples can "talk" to Commodores, Radio Shacks, IBMs or any computer as long as they both have modems set at the same baud rate.

Q Do I need special hardware to use a modem?

A No, but to achieve maximum efficiency, every modem-equipped computer must be connected to two disk drives and a printer, and have at least 128K of memory.

Q How much does a modem cost?

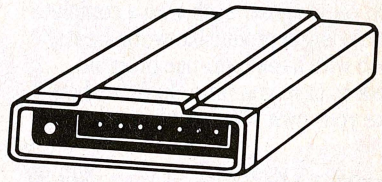
A The Apple modems average $225 for a 300-baud and $495 for a 1200-baud. Hayes modems average $279 for a 300-baud and $599 for a 1200-baud. (Hayes has set the standard for modems and many companies make Hayes-compatible products.) Internal modems (modems that look a lot like a printer card and are placed in a slot inside your computer) are available for some computers, and are less expensive than external modems. In some ways they are better because they remain inside the computer and have less chance of getting broken.

Q Do I need communications software for my modem?

A Yes. You need communications software to give commands to the modem, such as what phone number to dial; and when to send, receive, and save files to disk. Most modems come with their own software. (For instance, the Hayes Smartmodem IIe that I purchased for my school included the software, *Smartcom I*.) Most communication programs will operate with most modems, but they won't necessarily take full advantage of the modem's power. The best way to get a "perfect fit" is to buy the modem and software as a package. If the modem you select doesn't contain its own software, check software packages for a listing of compatible modems, or check with the modem manufacturer.

Q How do I find the best modem to use in my classroom?

A First read the literature. Most computer magazines have evaluated modems at some time and have listed their good and weak features. Many libraries keep back copies of these magazines. Second, shop the computer stores. The salespeople are eager to answer your questions;



One type of modern modem.

help you decide what you need for your particular situation; and in some cases, will demonstrate the modem for you. After you decide what modem you need, compare prices—many stores offer discounts to schools.

Q What does it cost to use a modem?

A First of all, you must consider the cost of installing a telephone line. It is absolutely necessary that the modem-equipped computer have its own line and number — it cannot go through a central system, or be connected to a party line, pay phone, or answering service. These installation costs will vary. The installer gets an hourly rate, so if the lines must be installed around barriers or through walls or roofs, time and equipment will become an important expense factor.

Monthly carrying charges also fluctuate due to individual rates of phone companies. Local phone calls on your computer are covered in the regular monthly phone bills, but if you dial an out-of-town number, it will cost the same as the regular rates for a voice call. You can check with your local phone company for actual rates and charges. Connecting to and through an information service is also an additional cost.

An alternative to paying regular long-distance telepone charges is to use a service such as Tymshare's "Tymnet" or GTE's "Telenet" (others exist as well. Check with your computer retailer). These are communication networks devoted exclusively to computer communications. They are accessed through local numbers and may help reduce telephone charges, especially if you are

in a remote area. The average charge is $10 per hour for "prime time" and $2 an hour in the evening.

Q What is an electronic information service?

A An information service, sometimes called an information utility, is a company or data base that offers both information and services. Some of the largest companies are CompuServe, The Source, Dialog, and Dow Jones News/Retrieval. There are many others entering the field. They all offer similar services, such as electronic mail, real-time communications, airline guides, encyclopedias, and games. They also have features unique to themselves or to a certain interest group.

Most information services charge for usage by the minute or hour. Often they will charge more for 1200-baud usage. And they all charge more during prime time, which is usually considered the hours between 6 a.m. and 6 p.m. on weekdays. Prices range from Dow Jones' $1.20 per minute to CompuServe's $12.50 per hour (300-baud, prime-time rates). There are also a few surcharges, such as yearly fees. My school used CompuServe together with a middle school, and found that we averaged $65 a month in online charges.

Q How do I subscribe to an information service?

A Contact your local computer retailer for the phone numbers.

Q What is the difference between an information service and a bulletin board system?

A A bulletin board system is different in that most are privately run. All of them are free for the phone call, and there are thousands in existence across the country. Some of them are simple message boards, but many are very advanced and present the caller with an extensive menu from which to choose. You can get telephone numbers for bulletin boards from your local computer store, or you may purchase a book called *Phone List* from any bookstore.

Q How can I use a modem in my classroom?

A You can begin by using the modem for simple connections within your school system, such as setting up students with electronic "pen-pals" from other schools. Then you can branch out and make connections with students throughout the country, exchanging electronic mail, doing weather watches, learning about other lifestyles, and sharing experiences. Students can exchange creative writing or play games with students in other states.

The encyclopedia and news/retrieval services offer many possibilities for researching reports and term papers using their data bases. Some services can even be used to arrange "guest speakers" for your class, like hooking up with astronomers, astronauts, or other scientists. The possibilities are endless!

Q How do I prevent students from abusing the modem?

A If children are absorbed in fun and interesting online activities, chances are good that they won't be tempted to cause any trouble. I personally don't keep a physical phone in the computer room because it is not needed to operate my modem and it avoids the temptation of making voice calls to friends. When my students are online with other students, I oversee them at all times. We also have a rule in my school — anyone who abuses the privilege of using the computers and modems in our lab looses access to the lab.

Good luck and happy telecommuting!

This month's adviser is ***Jean Tennis***, a fifth grade teacher at Radcliffe Elementary School in Nutley, New Jersey. Jean has been a successful telecommunicating teacher for two years.

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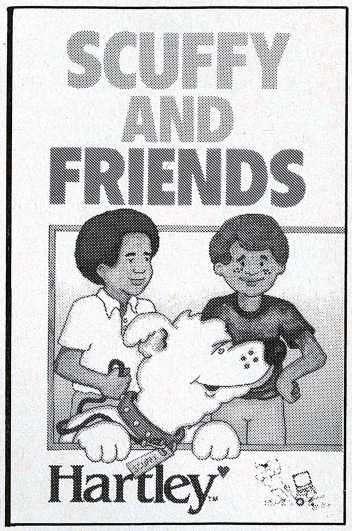

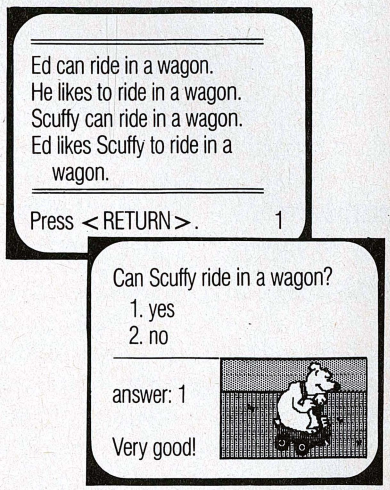

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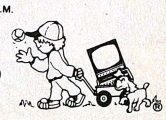

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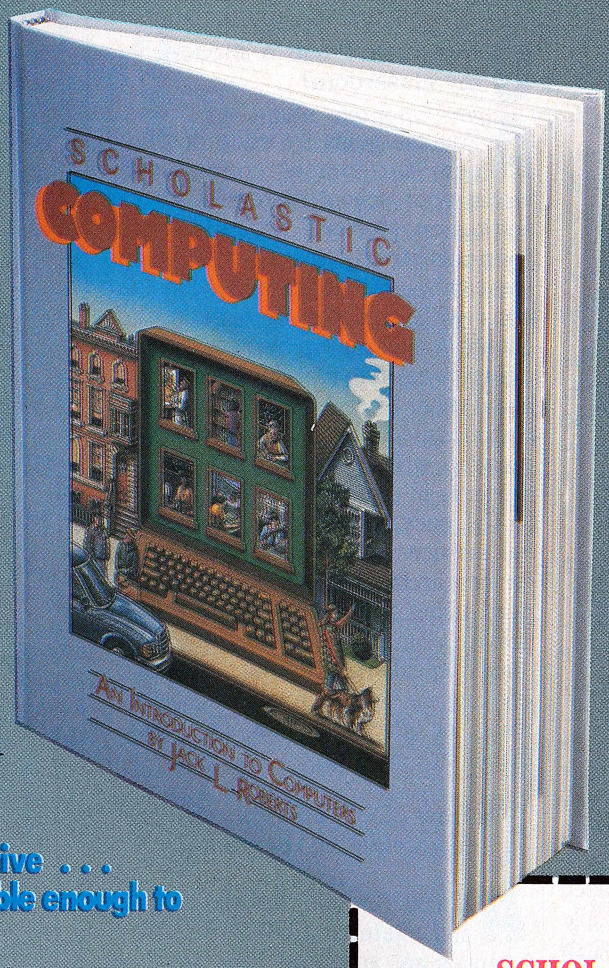

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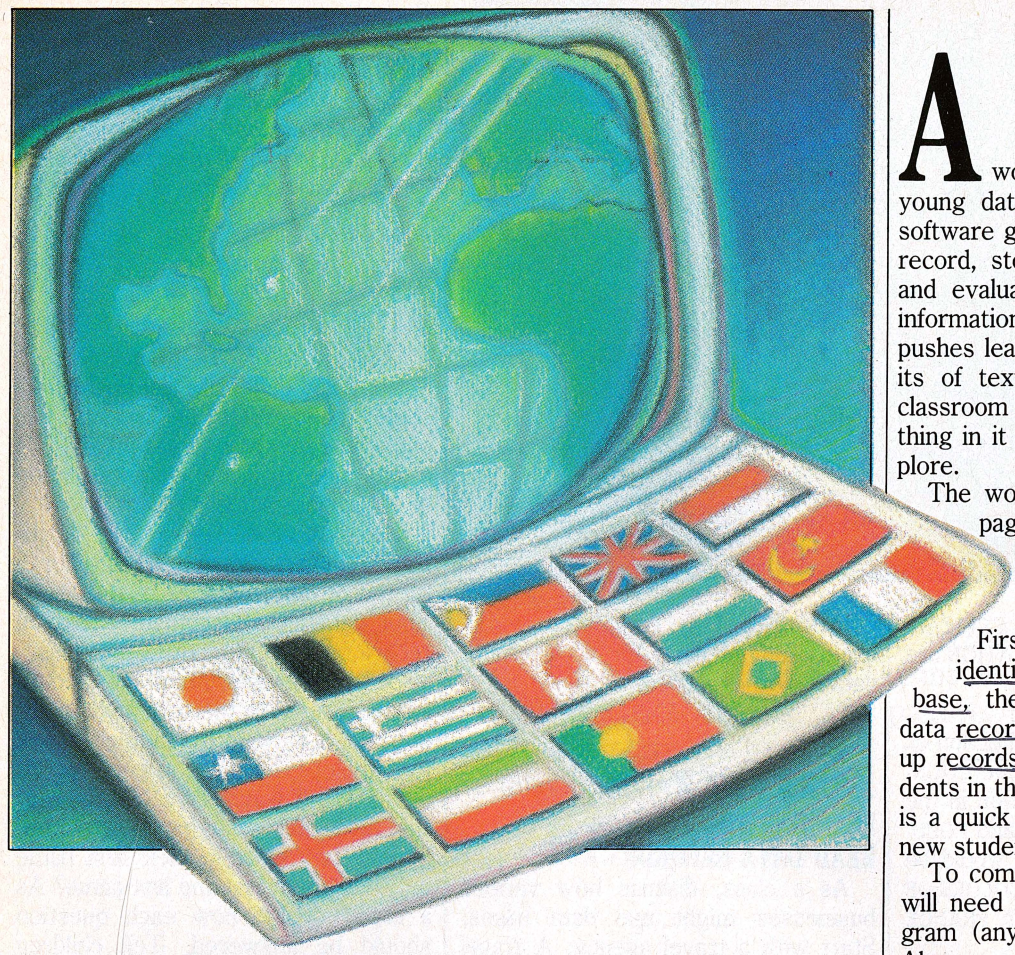


WORLDS OF INFORMATION

Three activity worksheets that show students how to use a data base to access information of global proportions!

Armen Kajoyian

A world of information awaits young data base users! Data base software gives children the power to record, store, sort, search through, and evaluate enormous amounts of information in just a few minutes. It pushes learning well beyond the limits of textbooks. It connects your classroom with the world and anything in it your students wish to explore.

The worksheets on the next few pages, and the teachers' notes that accompany them, are designed to introduce students to data base use. First, students will learn how to identify the main parts of a data base, then they learn how to read data records, and finally, how to set up records for a data file on the students in their class. (This last activity is a quick way to get to know your new students!)

To complete the last activity, you will need a data base software program (any brand) and a computer. Also, you or an assistant must be able to use the software program to: (1) type in a design for a data base record on a student in your classroom, and (2) enter data into the record. The other worksheets do not require additional materials or special computer skills.

By the time children complete these activity sheets, they will not only know *how* to use a data base; they will know *why* so many people in both the worlds of education and business use data bases. They will learn that having sortable data at your fingertips brings power!

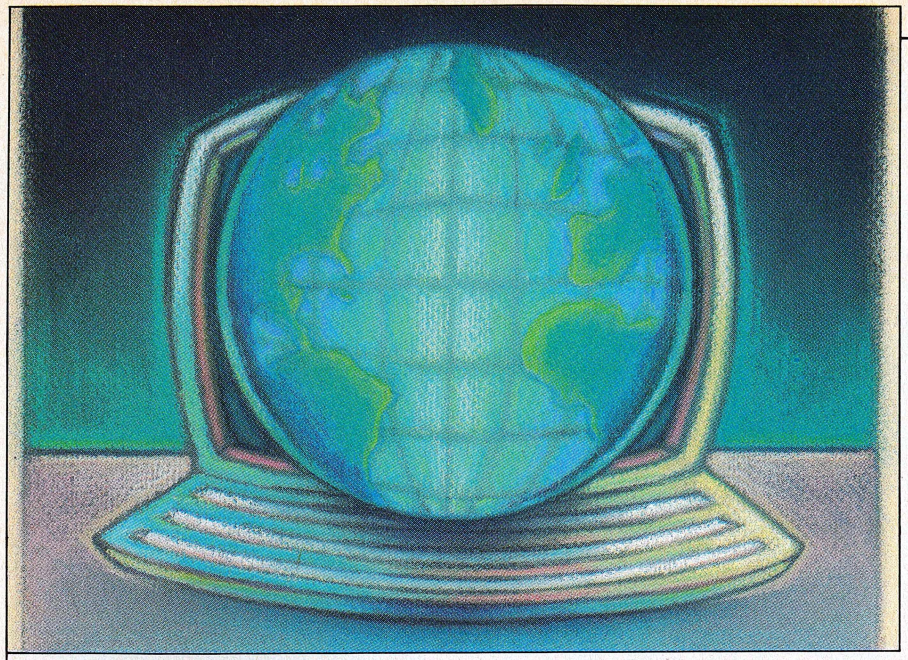
ACTIVITY #1

PARTS OF A DATA BASE

Copy and distribute the worksheet on page 15. The first paragraph of this worksheet defines a data base program. Read over the definition with your children. Then discuss the three parts of a data base, *fields, records,* and *files*, in detail. Use these definitions:

1. Field: A field is a category or item of information. For example, in the COUNTRIES data file on the "Parts of a

(continued)



Data Base" worksheet, CAPITAL, COLORS OF FLAG, and POPULATION are fields.

2. Record: A record is a collection or listing of related fields. In the COUNTRIES data file, the information in the CAPITAL, COLORS OF FLAG, and POPULATION fields for DENMARK would be one record. The CAPITAL, COLORS OF FLAG, and POPULATION for FRANCE would be another record.

3. File: A file is a collection of related records. The record for DENMARK, and the record for FRANCE, and records for any other countries, make up a file.

Once students understand how information is organized within a data base, ask them to follow the directions written at the bottom of their worksheet. The directions ask kids to add records and fields to the COUNTRIES data base that is illustrated on the sheet. *(Additional records could include:* U.S.A., CANADA, FINLAND, RUSSIA, IRELAND, *etc. Additional fields could include:* LANGUAGE, CLIMATE, CURRENCY UNIT, AREA, CONTINENT, TYPE OF GOVERNMENT, FAMOUS LANDMARKS.*)*

Be sure to point out that each record in a data file contains the same field categories. This assures the user of receiving complete and consistent information when working with a file.

The final direction on the worksheet asks students to fill in information for each field in the DENMARK record. Most encyclopedias can provide this information.

Challenge: Use completed worksheets as the basis for a classroom data file on countries.

ACTIVITY #2

LEARNING TO READ DATA RECORDS

As a class, discuss how various businesses might use data bases. Start with a travel agency. A travel agent can set up a file containing a record for each customer, including such fields as DESTINATION, AIRLINE, DEPARTURE TIME, and ARRIVAL TIME. That way, if the airline tells the travel agent that it has changed the time for a certain flight, the travel agent can ask the computer to search through the data files for all the customers on that flight. The travel agent can then advise all customers of the change.

Copy and distribute the "Learning to Read Data Records" worksheets on pages 16 and 17. The worksheets ask students to read through a series of data records used in the various businesses of a fictitious town. Children then use the file information to deduce the culprit of a computer crime. The purpose of these worksheets is two-fold: (1) they help kids become comfortable with reading information in data bases, and (2) they demonstrate how data bases are used in some of today's businesses.

Solution to the case: *Chip Chipster is the culprit; the other suspects were doing something else at the time of the crime. Shifty Keyes was unconscious in the hospital, Bertha Buggs was checking out a book at the library, and Polly Programme was mailing a box at the post office when the crime was committed. Kids should also note that Chipster booked a one-way ticket to Athens for the day of the crime, and that he wasn't home the day after when he missed an appointment at the vet.*

ACTIVITY #3

SETTING UP A CLASSROOM DATA FILE

Copy and distribute the final worksheet (page 18). This activity will show students how to set up and use a data base that contains information on their classmates.

The box at the top of the worksheet shows a sample design for a record on one member of the class. Your data file will contain one such record on each student in the class.

Before students fill out this record and transfer it to the computer, point out that it is important for everyone to complete the fields in each record in the same way. Have kids look at the field that asks for their name. Should they write in their first name only? Or their first and last name? As a class, decide how each question should be answered. Tell children that it is easier to compare records when information in each field is provided in the same way.

Now let children fill out the record on their worksheet. As they are completing the record, boot up your data base program and type in the record design. You may need to modify the design a bit to suit the capabilities of your particular software program.

Show students how to enter information into a record. Then let them take turns entering information into their "own" record.

After they are finished, show children how to *sort*, or search through, the records for specific information. Then have them use the data file to answer the questions at the bottom of the worksheet.

By all means, don't forget to discuss the answers to this worksheet; especially if you complete this sheet in September. It can be a terrific way for you and your students to get to know each other! Also, the results may lead to even more interesting discussions, such as how owning a cat is different from having a dog, or how being an only child differs from having brothers and sisters.

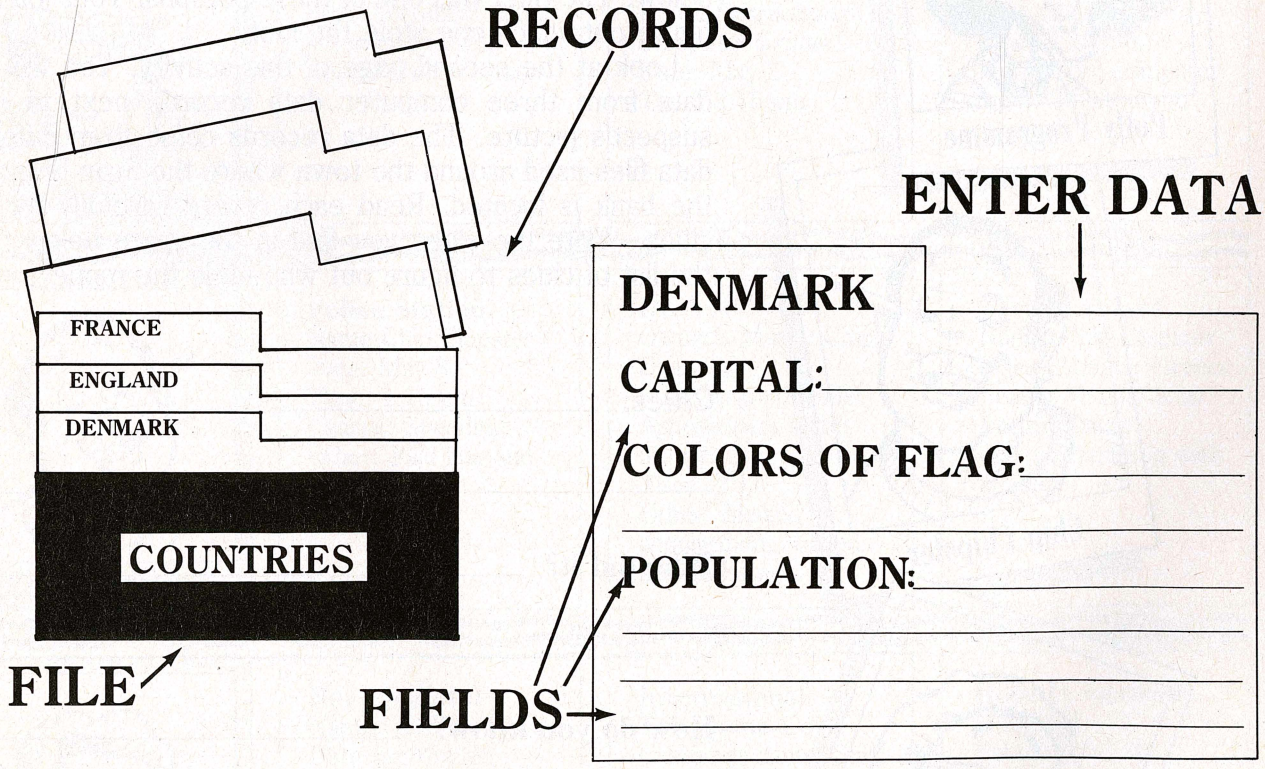
ACTIVITY #1

NAME: _____
DATE: _____

PARTS OF A DATA BASE

A *data base* program is a piece of software that works a lot like a file of index cards. It can help you organize and store pieces of information. These pieces of information are called *data*. A data base program can be more helpful than a file of index cards, however. In a matter of minutes, it can sort through hundreds of pieces of data and find just the piece or pieces you want.

All data base programs include three main parts: *files*, *records*, and *fields*. The picture on this page is not what a data base actually looks like inside a computer. Inside a computer, these parts are really electrical signals. This picture, however, can help show how parts of a computer data base relate to each other. Review each part with your teacher. Then follow the directions below.



DIRECTIONS:

1. Look at the records in the COUNTRIES file (above, left). Add three more records to the file.
2. Look at the three fields in the DENMARK record (above, right). Add three more fields to the record.
3. Fill in information for each field in the DENMARK record.

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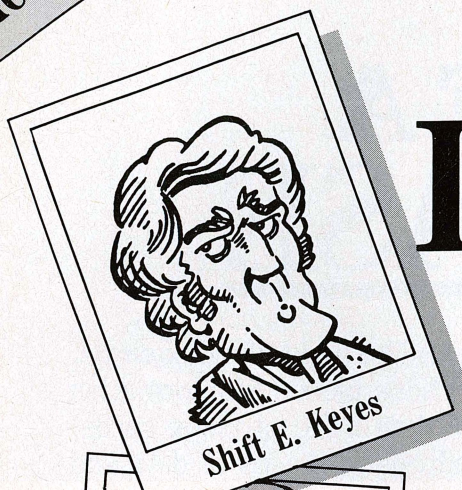
ACTIVITY #2

NAME: _____

DATE: _____

LEARNING TO READ DATA RECORDS

OR THE GREAT DATA BASE CASE



DIRECTIONS: Someone has stolen $99,999 from the Worldwide Bank and Trust! What's more, the thief used the bank's computer to do it. According to the computer's records, someone at the main branch of the bank transferred the money into an account in another country at 3:15 on May 8.

Only four persons knew the secret international password used by the bank's computer. Their pictures are below. The thief was one of these persons. Your job is to figure out which one stole the loot.

Look at the second page of this activity. You will find data from three computer data records next to each suspect's picture. The data records come from different data files used around the town where the main branch of the bank is located. Read each record carefully for any clues. Write the clues you find in the space below. Use the list of clues to figure out who stole the money.

Clues: _____

_____

Who did it? _____

_____

How do you know? _____

_____

_____

_____

_____

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ACTIVITY #2

NAME: _____
DATE: _____

LEARNING TO READ DATA RECORDS

(continued)

Polly Programme

Post Office
Customer: Polly Programme
Date: May 8
Time: 3:15
Package: One large box
Sent to: Geneva, Switzerland
Insure for: $1,000

Terry's Travel
Name: Polly Programme
Place: Paris
Leave: May 8, 3:35
Return: None
Other: Cancelled May 7

Daily Newspaper
Subject: Polly Programme
Date: May 9
Headline: Programme Gives Speech at Twilight Meeting of Canary Lovers

Bertha Buggs

Daily Newspaper
Subject: Bertha Buggs
Date: May 7
Story Headline: Buggs Promoted to Top-Secret Bank Position

Public Library
Borrower: Bertha Buggs
Book: *International Computer Crimes*
Date: May 8
Time: 3:15 pm

Hope U. Getwell Hospital
Patient: Bertha Buggs
Date: May 9
Time: 2:15 pm
Injury: Sore computer finger. Treated and released.

Chip Chipster

Police Station
Name: Chip Chipster
Date: May 8
Time: 1:15 pm
Charge: Speeding
Other: Paid fine and released

Dr. Vet
Owner's Name: Chip Chipster
Pet: Cocker Spaniel
Appointment Date: May 9
Time: 2:15
Other: Missed appointment. Called, no one home.

Terry's Travel
Name: Chip Chipster
Place: Athens, Greece
Leave: May 8, 3:30
Return: None
Other: Traveling with his dog

Shift E. Keyes

Harry's Hotel
Name: Shift E. Keyes
Date In: May 8
Time: 2:15
Other: Take messages for all telephone calls

International Telephone Co.
Customer name: Shift E. Keyes
Date of call: May 8
City called: Paris, France
Time called: 2:30
Length of call: 15 minutes

Hope U. Getwell Hospital
Patient: Shift E. Keyes
Date: May 8
Time: 3:10 pm
Injury: Knocked out

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ACTIVITY #3

COPY

NAME: _____

DATE: _____

SETTING UP A CLASSROOM DATA FILE

DIRECTIONS: Fill out the form below. Have your teacher show you how to enter the information into a computer data file. Then sort through the data file to answer the six questions at the bottom of the page.

STUDENT RECORD

NAME: _____

PETS: _____

BROTHERS/SISTERS: _____

YEARS COMPUTING: _____

HAVE HOME COMPUTER: _____

OTHER COUNTRIES VISITED: _____

OTHER STATES VISITED: _____

1. How many students in the class have dogs? _____

2. How many students have cats? _____

3. How many students have visited other countries? _____

4. Which three students have visited the greatest number of states? _____

_____ _____

5. Which three students have the most years of computing experience? _____

_____ _____

6. How many students have computers at home? _____

Challenge: Write two more questions that can be answered by using this data file. Find the answers!

_____

_____

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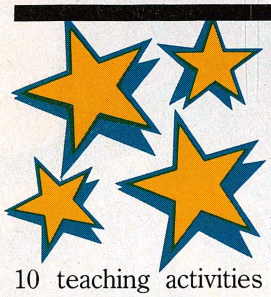
Four short program listings that rate the teaching seal of excellence!

GOLD STAR PROGRAM LISTINGS



Looking for a few good program listings? Inside this pack are four outstanding new programs, plus 10 teaching activities to use along with them! Type these BASIC listings into your computer, and you'll be ready to boot up some "solid gold" math, language arts, and social studies activities the first day your students walk through the door.

Each program listing is written for a specific brand of computer, but all can be converted for use on other machines. Conversions are supplied on page 60 (when needed), for Apple II series, IBM (PC & PCjr), Atari (800XL), Tandy/Radio Shack (TRS-80, Model III, Color Computer) and Commodore 64 and VIC-20 computers. The only exception is the *Back-to-School News Quiz* for which Atari conversions are not provided.

If you are not very experienced at typing BASIC program listings into a computer, be sure to read the box on page 24 entitled "How to Use BASIC Program Listings."

LETTER GETTER

If your students are slow at locating letters on the computer keyboard, boot up *Letter Getter*, and watch the fingers fly! In this program, a random letter appears on the bottom of the computer screen and gradually moves upward. The player scores a point by finding the same letter on the keyboard and pressing it before the letter scrolls off the screen. If he or she misses, the game ends and the player's final score is shown.

Programming Instructions

Type *Letter Getter* into your computer and save it on disk or cassette. Before typing RUN, make sure your keyboard is set to type all capital letters, as the program does not recognize lower case input.

Letter Getter
For IBM PC & PCjr

```
10 WIDTH 40: KEY OFF: DT = 150
20 SC = 0
30 CLS
40 CH = INT (RND * 26) + 65
50 LOCATE 24,INT (RND * 38) + 2,0
60 PRINT CHR$(CH);: I = 23
70 K$ = INKEY$
80 IF K$ < >CHR$(CH) THEN 110
90 CLS: SC = SC + 1
100 FOR DE = 1 TO 250: NEXT DE: GOTO
    30
110 FOR DE = 1 TO DT: NEXT DE: PRINT
120 IF I > 0 THEN I = I – 1: GOTO 70
130 CLS
140 PRINT "YOU GOT ";SC; " LETTERS!"
150 PRINT : PRINT "DO YOU WANT TO
    PLAY AGAIN?"
160 INPUT Z$: IF Z$ = "Y" OR Z$ = "YES"
    THEN GOTO 20
170 PRINT: PRINT "THAT'S ALL,
    FOLKS. . . .": END
```

To use the program on Apple, Atari, and Commodore machines, see conversions on page 60.

To increase the speed at which letters move up the computer screen (and hence, to motivate kids to increase their typing speed), decrease the last number that appears in line 10. If you want to make the letters move slower, simply increase the last number.

If you want to change *Letter Getter* so that students can practice finding numbers, punctuation marks, and other keyboard symbols as well as letters, change line 40 to read:

```
40 CH = INT (RND * 57) + 33
```

Ron Zalme

(This change is only recommended for advanced keyboarders.)

Additional Activities

- Two students can use *Letter Getter* together to increase both their typing and vocabulary skills. Assign a pair of students a topic to work with, such as animals, states, or foods. As one student tries to strike the appropriate key before the letter reaches the top of the computer screen, a second student says a word that begins with that same letter. The word must be related to the given topic. His or her challenge is to say the word before the first student strikes the correct letter on the keyboard and the next letter appears. If the second student comes up with a word before his or her opponent types the correct letter, the two players switch places and a new game begins.
- *Letter Getter* is a good program to use when explaining the concept of ratios. Set the program at a manageable speed and have a fast typist sit at the computer while other students look on. Ask students to figure out the ratio of the number of times a particular letter makes its way up the computer screen to the total number of letters they have seen up to that point. If, for example, after 26 letters have been generated, students have found two *A* s, then the ratio of *A* s to the total number of letters generated is 2:26 or 1:13. Using these same figures, ask children to determine the ratio of the total number of letters generated to the number of *A* s seen *(26:2 or 13:1)*.

When doing this exercise, it is important to note that the letters generated by *Letter Getter* are not completely random, and will often repeat the same pattern when the program is run.

This program is printed with permission from Family Computing *magazine.*

Quick Tip: For young hunt-and-peck typists, point out that all vowels, except for *A*, are located on the "QWERTY" (top letter) row of the keyboard. You'll be amazed at how much quicker fingers move after calling kids' attention to this fact.

Yvonne Leake
Williamsville, NY

(continued)

MATHE—MAGIC

THINK OF A NUMBER, BUT DON'T TELL ME WHAT IT IS.
(6)
PRESS <RETURN>
DOUBLE YOUR NUMBER. (MULTIPLY BY 2.)
(12)
THEN MULTIPLY THE RESULT BY 5.
WHAT DO YOU GET?
(60)
YOUR ORIGINAL NUMBER WAS 6.
DO YOU WANT TO PLAY AGAIN?

Above is a sample of what students will see when playing *Mathe-magic*. "How does the computer know what number I picked?" kids will ask. Students can develop important problem solving skills by investigating the answer to this question.

Programming Instructions

First, type the program listing for *Mathe-magic* into your computer and save it on disk or cassette.

Mathe-magic
For Atari (800XL)

```
1 DIM Z$(5)
10 PRINT CHR$(125): PRINT " THINK OF A
   NUMBER, BUT DON'T"
20 PRINT "TELL ME WHAT IT IS."
30 PRINT : PRINT " PRESS <RETURN>.":
   INPUT Z$
40 PRINT : PRINT " DOUBLE YOUR NUM-
   BER (MULTIPLY"
50 PRINT "BY 2)."
60 PRINT: PRINT: " THEN MULTIPLY
   THE RESULT BY 5."
70 PRINT: PRINT " WHAT DO YOU GET?
   TYPE IN YOUR"
80 PRINT "NUMBER AND PRESS <RE-
   TURN>"
90 INPUT N:N = N/10
100 PRINT:PRINT " YOUR NUMBER WAS"
   ;N;"."
110 PRINT: PRINT " DO YOU WANT TO
   PLAY AGAIN?"
120 INPUT Z$: IF Z$ = "Y" OR Z$ = "YES"
   THEN 10
130 PRINT: PRINT " COME BACK
   SOON. . . .": END
```

To use the program on Apple, IBM, or Commodore computers, see the conversions on page 60.

Beginning Activity

Have students run the program two or three times, thinking up a different number each time. Do they see a pattern in the way the computer uses the number they input at the end of the program to guess the original number? *(It always divides that number by 10.)*

Now comes the hard question: why is it that this always works? Run the program one more time. While going through each step the computer asks of the user, see if students can explain the logic that makes *Mathe-magic* work. *(If you double a number and then multiply by five, you've actually multiplied the original number by 10. Divide by 10 and you are again left with the original number.)* The equation, if n = number, would look like this:

n X 2 X 5 = n X 10 or 10n
10n/10 = n

LIST the program, and show your students where the real "magic" of this program is accomplished—in line 90 when the computer divides the number it is given by 10.

Additional Activities

- Children can use *Mathe-magic* to practice addition and multiplication operations. Have them think of a number, do whatever math the computer asks them to, and then type in their final answer. If the computer guesses the number they were originally thinking of, then the math was done correctly.
- Tell your students that once they know the trick behind *Mathe-magic*, there is no end to the number of similar math tricks they can perform. See if your students can produce a few. If your students know programming, print out the program listing for *Mathe-magic*. Then, using the listing's format, see if kids can write their own programs that perform similar math tricks. Following is a sample mathe-magical trick that could be converted into a program.

1. Think of a number.
2. Add 10.
3. Multiply that number by 2.
4. Now subtract 20.
5. The original number is the number you are left with, divided by 2.

Edward Watson
Levittown, PA

DOLLAR WORDS

Pretend each letter of the alphabet is worth an amount of money. *A* is worth 1¢, *B* is worth 2¢, and so on, until you reach *Z*, which is worth 26¢. Help your students set up a chart that shows how much each of the 26 letters in our alphabet is worth.

Now ask students which is worth more: a dollar or a penny. The obvious answer is a dollar. But tell kids that you know a way to make a penny worth more than a dollar. Have students use the chart they just made to add up the worth of the word "dollar." *(Add the numeric value of each letter and you will get 62¢.)* How about a "penny"? *(74¢)* There's the proof! A penny *can* be worth more than a dollar!

Children can calculate the worth of any word electronically with the help of the *Dollar Words* program. This program uses the 1¢-to-26¢ method to calculate the worth of words.

Programming Instructions

Type the *Dollar Words* program listing into your computer and save it on disk or cassette.

Dollar Words
For Commodore 64

```
10 PRINT CHR$(147): CLR
20 PRINT " $$$ DOLLAR WORDS $$$"
30 PRINT : PRINT " ENTER A WORD: "
40 INPUT W$: L = LEN (W$): IF L = 0
   THEN 40
50 FOR X = 1 TO L: C$ = MID$ (W$,X,1):
   C=ASC(C$)
60 IF C > 64 AND C < 91 THEN
   V= V + (C - 64)
70 NEXT X
80 SUM = V * .01: GOSUB 1000
90 PRINT: PRINT " "; W$;" IS WORTH:
   $";SUM$
100 PRINT: PRINT " DO YOU WANT TO
   PLAY AGAIN?"
110 INPUT Z$: IF Z$ = "Y" OR Z$ ="YES"
   THEN 10
120 PRINT: PRINT " THAT'S ALL,
   FOLKS. . . .": END
1000 REM CHECK FOR FINAL ZERO
1010 SUM$ = STR$ (SUM): L = LEN
   (SUM$)
```

```
1020 FOR CHR = L TO 1 STEP - 1
1030 IF MID$ (SUM$,CHR,1) < > "." THEN
     NEXT CHR: SUM$ = SUM$ +
     ".":CHR = L + 1
1040 SUM$ = SUM$ + "00": SUM$ =
     LEFT$ (SUM$,CHR + 2)
1050 IF SUM < 1 THEN SUM$ = "0" +
     SUM$
1060 RETURN
```

To use this program listing on IBM, Apple, and Atari computers, see page 60 for conversions.

Beginning Activity

- Use *Dollar Words* to check students' math after they have tried figuring out on paper the "worth" of a nickel, dime, and quarter. Which monetary unit is worth the most? (*A quarter.*) Which is worth the least? (*A dime.*)
- Whose first name in your classroom is worth the most?
- *Dollar Words* can even figure out the worth of sentences! Have each student in the class write a topic sentence on a particular subject, such as "What I Did Over My Summer Vacation." Then have kids type their sentences into the *Dollar Words* program. The program will calculate how much the entire sentence is worth. Now ask students this: does having the most "valuable" sentence in the class mean that it is also the best written sentence?

Additional Activities

- Give students a list of vocabulary words on a particular topic and ask them to figure, without the computer's help, which word in the group is worth the most. For example, which is worth the most in this word list on emotions: "love" (*54¢*), "kindness" (*95¢*), "fear" (*30¢*) or "hatred" (*56¢*)? (*Kindness is worth the most.*) Which is worth the least? (*Fear.*) Have kids check their answers by inserting the words into the *Dollar Words* program.
- Challenge your students to use *Dollar Words* to help them make up a list of words that are worth $1 exactly. At the end of a certain amount of time, such as one or two days, compare lists to see who has accumulated the most $1 words. To win, the student with the most words must be able to give a definition for every word on his or her list. (For the sake of time, simply spot check children on their definitions.)

Students can use the dictionary to help them locate $1 words, but they will be held responsible for the definitions of any that they find.

Here are some $1 words to get kids started: *turkey, elephants, printer, telephone, boulevard, chimpanzee, quarter.*

- Have children use *Dollar Words* to help them write wacky sentences about the worth of certain objects. For example: "Millionaires may be people with a lot of money, but they are only worth $1.17 each." Or: "Due to inflation, a penny candy is now worth $1.21."

Mike Mitchell
Conroe, TX

BACK-TO-SCHOOL NEWS QUIZ

How well did your students keep up with current events during the summer? This back-to-school news quiz will help you find out.

Programming Instructions

Type the program listing for *Back-to-School News Quiz* into your computer and save it on a disk or cassette.

Back-to-School News Quiz
For the Apple II series

```
10 SC = 0:  Q = 5:  DIM  Q$(Q),
   C1$(Q),C2$(Q), C3$(Q),A$(Q)
20 HOME : FOR X = 1 TO Q
30 READ Q$(Q), C1$(Q), C2$(Q),C3$(Q),
   A$(Q)
40 PRINT : PRINT X; ". ";Q$(Q)
50 PRINT: PRINT " A. ";C1$(Q);"."
60 PRINT: PRINT " B. ";C2$(Q);"."
70 PRINT: PRINT "C. ";C3$(Q);"."
80 PRINT: PRINT "ENTER A, B, OR C AND
   PRESS <RETURN>."
90 INPUT G$: IF G$ < > "A" AND G$ < >
   "B" AND G$ < > "C" THEN 90
100 IF G$ = A$(Q) THEN PRINT: PRINT "
   THAT'S IT!": SC = SC + 1
110 IF G$ < > A$(Q) THEN PRINT:
   PRINT "  SORRY, THE ANSWER IS
   ";A$(Q); "."
120 PRINT: PRINT " PRESS <RETURN>
   TO CONTINUE.": INPUT Z$
130 HOME : NEXT X
140 PRINT : PRINT " YOU GOT ";SC; "
   RIGHT OUT OF ";Q;"."
150 PRINT : PRINT " GOODBYE. . .": END
1000 DATA ON JULY 4 THE STATUE OF
   LIBERTY  TURNED HOW OLD?
1010 DATA 50 YEARS, 100 YEARS, 200
   YEARS,B
1020 DATA IN WHAT COUNTRY WAS A
   WORLD'S FAIR  CONDUCTED THIS
   SUMMER?
1030 DATA CANADA,UNITED STATES,
   FRANCE,A
1040 DATA WHAT IS 'CRACK'?
1050 DATA A NEW CURE FOR CANCER
1060 DATA A POLICE FORCE THAT
   CATCHES SPIES
1070 DATA A FORM OF THE DRUG CO-
   CAINE,C
1080 DATA WHAT IS THE ROGERS COM-
   MISSION?
1090 DATA A GROUP THAT STUDIED
   THE EXPLOSION OF THE SPACE
   SHUTTLE CHALLENGER
1100 DATA A BRITISH ROCK GROUP
1110 DATA A GROUP THAT STUDIED
   DRUG ABUSE IN BASEBALL,A
1120 DATA KURT WALDHEIM WAS
   ELECTED PRESIDENT  OF WHAT
   COUNTRY?
1130 DATA AUSTRIA, AUSTRALIA,
   SOUTH AFRICA,A
```

To use the program on Commodore and Tandy/Radio Shack computers, see conversions on page 60.

Additional Activity

Challenge students to write news questions of their own. Then add them to the program listing. Here's how.

1. Change the 5 in line 10 of the listing to the total number of questions in your quiz. (Q = number of questions in quiz.) You can add an unlimited number of questions.
2. Add four DATA statements at the end of the quiz for each question you wish to add. The first DATA statement asks a question. The second, third, and fourth DATA statements give three possible answers to the question, only one of which is correct. A letter (A, B, or C) will automatically appear before each question, and a period will automatically follow each letter when the choices appear on the screen. Remember not to use any commas or colons in the data statements that you write.
3. Place a comma after the data statement containing your third possible answer, and then type in a capital letter A, B, or C, depending upon which possible answer was the correct one: your first (A), second (B), or third (C).

Before you give the quiz to a student, run the program to make sure that the quiz works properly, and that words do not split in half at the end of a line. If this occurs, go to the program listing and add spaces before the word that splits. This way, the word will automatically wrap around to the next line.

FOR BEGINNERS:

HOW TO USE BASIC PROGRAM LISTINGS

Each issue of *Teaching and Computers* magazine provides one or more program listings written in the BASIC computer language. Although you don't have to understand the BASIC language to use these listings with students, there are a few things you will need to know about entering, saving, and loading programs before you can input the listings into your computer. Here is how to educate yourself:

First, read the short guide that follows. It provides you with a step-by-step explanation of how to enter program listings into your computer. It also provides general directions for reloading a program listing you have saved.

Second, refer to the Disk Operating System (DOS) manual that comes with your computer. This manual gives you specific directions for saving programs on disk, loading them into the computer's memory, and running them.

Finally, learn how to edit program listings on your brand of computer. This will make correcting typing mistakes easier and faster. (Look under "Editing" in the BASIC manual that comes with your computer.)

HOW TO ENTER A BASIC PROGRAM LISTING

1. Load the BASIC language into your computer. The method for loading BASIC into the computer's memory varies according to computer brand. Here are specific instructions for the most common brands. (For brands not listed below, look in your computer user's manual under a heading like "Getting Started" or "Setting Up.")

Apple II Series: Insert the DOS 3.3 System Master Disk into the disk drive. Turn on the computer and then the monitor. When a right bracket (]) prompt appears on the monitor screen, the computer is in Applesoft BASIC. If you are using an Apple IIe or Apple IIc, make sure the CAPS LOCK key is down.

Atari Series: Turn on the monitor, the computer and the disk drive consecutively. When the word "READY," followed by a square prompt, appears on the screen, the computer is in BASIC.

Color Computer: Turn on the monitor, the computer, and the disk drive consecutively. When the word "OK" appears on the monitor screen, the computer is in BASIC.

Commodore Series: Turn on the monitor, the computer, and the disk drive consecutively. When the word "READY" followed by a blinking square cursor appears on the screen, the computer is in BASIC. If you are using a Commodore 128, change to 64 mode by typing GO64 and pressing RETURN.

IBM Series: Insert the DOS disk into disk drive A and the BASIC cartridge into its slot. Turn on the computer system. Type the date and time and press ENTER. When the A> prompt appears on the screen, type BASICA and press ENTER.

TRS-80 Series: Insert the TRSDOS disk into drive 0. Turn on the computer. Enter the date and time. Then type BASIC and press ENTER. Press the ENTER key two more times. When the word "READY" and the > prompt appear on the screen, the computer is in BASIC.

2. Insert a blank disk into the disk drive. This disk will later be used to store the program permanently. The disk must be *initialized* (or *formatted*) so that it is compatible with your brand of computer. For specific instructions on how to initialize a disk, look in your computer manual, disk drive manual, or Disk Operating System (DOS) manual under "Initializing" or "Formatting."

3. Type in the program listing. Starting with the first line of the program (usually line 10), type the program listing exactly as it appears. Include all line numbers, punctuation marks, spaces, symbols, and letters. Remember to press the RETURN or ENTER key each time you type a complete program line.

As you are typing, periodically save a copy of what you have typed on disk. (If you don't save the program as you go along, and the computer is accidently turned off, the program will be erased from memory and you will have to retype the entire listing.)

To save the program, type the following command, replacing FILE NAME with the name of your file (for example, MATHQUIZ):

Atari: SAVE "D:FILE NAME"
Apple: SAVE FILE NAME
Commodore: SAVE "FILE NAME",8
IBM and TRS-80: SAVE "FILE NAME"

4. Run the program. After you have finished entering the entire program, run it by typing RUN and pressing RETURN or ENTER.

If you get an error message, such as SYNTAX ERROR IN LINE 200, it means that you made a typing mistake on the line specified in the message. Correct any errors in the line and run the program again. If you don't see any errors in the line, but continue to get an error message anyway, retype the entire line from start to finish. This will erase any accidental keystrokes that you might have made, which didn't show up on the screen.

A few common typing mistakes include:

- Pressing the "0" (zero) key instead of the "O" (letter) key, and vice versa;
- Omitting or mistyping a comma, semi-colon, or colon;
- Omitting or misplacing quotation marks;
- Improperly counting spaces between quotation marks;
- Leaving out a line or command.

5. Save the program on disk. After you have finished correcting all the errors, save a final copy of the program on disk. You will not have to save the program again. You can now remove the disk from the disk drive and turn off the computer without losing your program listing.

HOW TO RELOAD THE PROGRAM

To reload the program into the computer's memory, put your computer in BASIC (see Step 1) and enter the following command, again replacing FILE NAME with the name of your file:

Atari: LOAD "D: FILE NAME"
Apple: LOAD FILE NAME
Color Computer, IBM, TRS-80: LOAD "FILE NAME"
Commodore: LOAD "FILE NAME",8

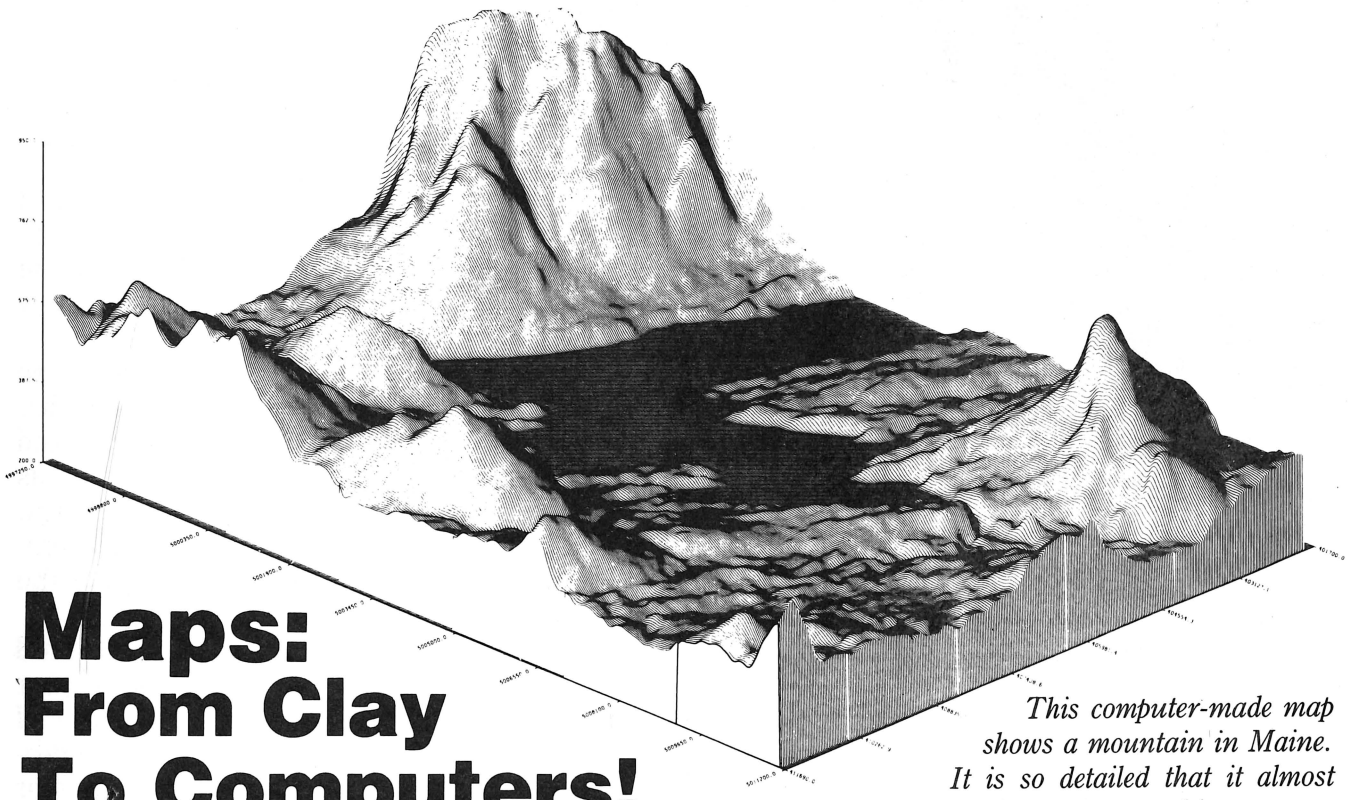
To run the program, type RUN and press RETURN or ENTER. ■

Student's Name: _____ COPY

MICRO TIMES

The mini-magazine for kids who love computers.

Published by Scholastic Inc. September 1986



Maps: From Clay To Computers!

This computer-made map shows a mountain in Maine. It is so detailed that it almost looks like a photograph!

People began making maps more than 4,200 years ago. Some maps were made out of clay. Others were made out of wood, ivory, or cloth. In fact, the word *map* comes from the Latin word *mappa,* which means cloth.

These early maps had many problems. For one thing, they were hard to use. Maps carved on clay were heavy, which made them difficult to carry.

Another problem was that they were hard to read. The maps often didn't have labels for the towns, rivers, and other places shown on them.

A third problem was that they were not always *accurate,* or exact. Some maps even showed the earth to be flat instead of round!

Most modern maps don't have these problems. One reason is that many of them are

(Continued on next page.)

INDEX

Maps: From Clay to Computers! 1,2
Bug Busters! 2
Face to Face Program 3
Computer Word Search 4

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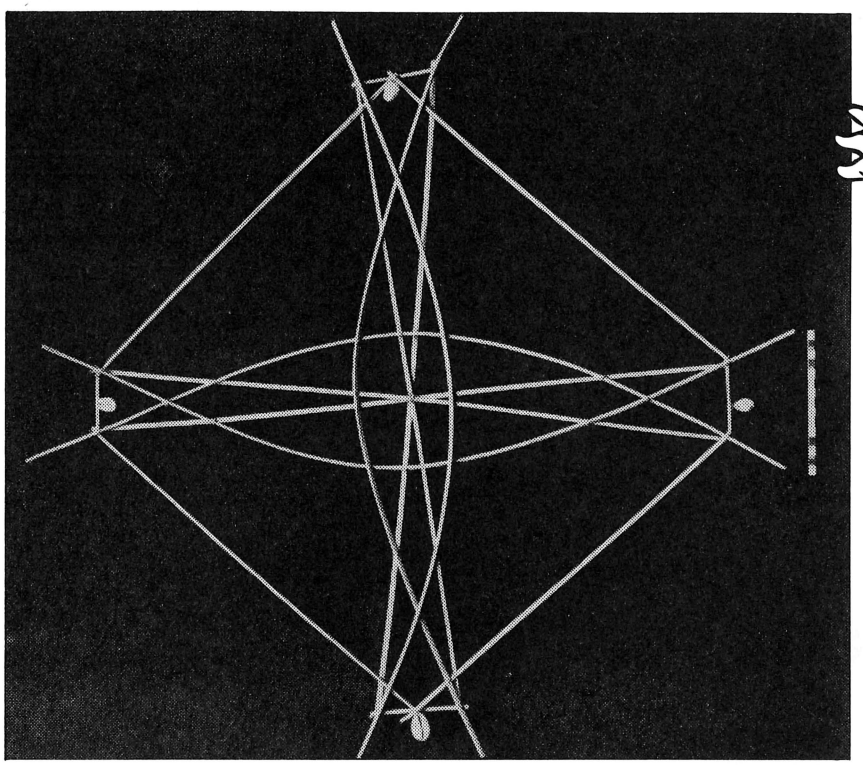
Edited by Lorraine Hopping.

Photo: U.S. Geographical Survey

Maps: From Clay to Computers! (Continued from page 1.)



This map is thousands of years old. It is made out of shells and sticks. The round shells stand for islands in the Pacific Ocean. The sticks stand for wave movements in the ocean. It is not very accurate.

made by computers. Computers can make maps much faster, easier, and more accurately than maps drawn by hand.

What does a computer map look like? An example of one is pictured on page 1a . This map shows Little Bigelow mountain in eastern Maine. The map shows many details of the mountain, including big peaks, small peaks, and everything in between! These details make the map easy to follow.

To make the map even easier to follow, computers can add colors. The colors make certain features on the map stand out better. For example, the computer could color the mountain peaks different shades of blue, depending on their height. The lowest mountain peaks could be dark blue and the highest peaks could be light blue. The peaks in between could be various shades of medium blue.

Coloring and other additions to the map can be done quickly and easily. Just enter a few commands into the computer and — *presto!* It's done! Isn't that better than carving maps out of clay?

Celeste Smith

Review Questions

1. What materials were used to make the first maps?
2. What problems did these early maps have?
3. What are the benefits of making maps with computers?
4. What makes computer-made maps easy to follow?

Fred's Friends

It's a new school year and Forgetful Fred is worried. What if he can't remember the names of all the kids in his new classroom?

To help his memory, Fred wrote a BASIC program that lists everyone's name. Fred put in all the names, but as usual, he forgot some things. He forgot to include a few commands and symbols, so the program doesn't work.

Put in the parts that Fred forgot. Then put some of your classmates' names in place of Fred's. Can you add to the program so that it lists all of your classmates? Then you will have your own computerized class list!

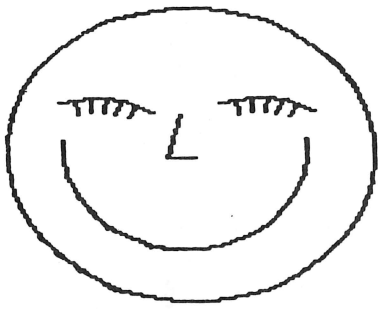
```
  EW
10 PRINT MY FRIENDS
20 PRINT "ANGELA
30 PRNT "BEN"
40 "CARRIE"
PRINT "DARRYL"
60 PRIN "ELIZABETH"
70 PRINT "FRED (THAT'S ME!)"
80 GARY
90 PRINT "SUE"
100 PRINT "JOHN"
110 END
```

ANSWER: See page 51 of your teacher's copy of *Teaching and Computers* magazine.

Photo: James's Press Agency

PROGRAM LISTING

Face to Face



The program makes this face.

Look at the shapes of your classmates' faces. Some faces are round. Some faces are oval-shaped. Some are even heart-shaped.

At right is a Logo program that makes a round face on the computer screen. The program is called *Face to Face*. To use it, you must first enter it into your computer. Then you can make faces using Logo.

What To Do

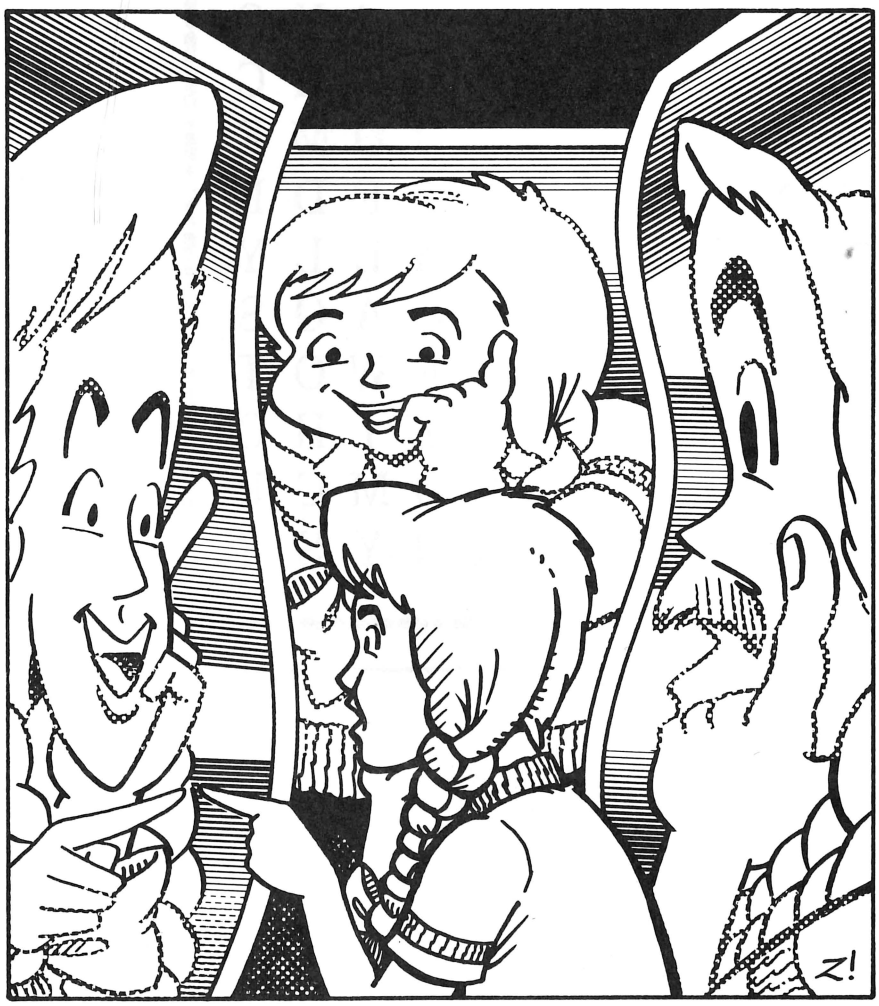
1. Load the Logo language disk into your computer. (You can use almost any version of Logo.)

2. Type in each procedure exactly as it appears.

```
TO ROUND.FACE
  REPEAT 36 [FD 12 RT 10]
END

TO EYE
  PD SETH 80 FD 6
  REPEAT 5 [RT 90 FD 7 BK 7 LT
90 FD 6 RT 10]
END

TO NOSE
  PD SETH 270 FD 10 RT 105 FD
20
END

TO MOUTH
  PD SETH 180
  REPEAT 19 [FD 8 RT 10]
END
```

3. To see a round outline of a face, type ROUND.FACE and press RETURN or ENTER.

4. Use the EYE, NOSE, and MOUTH procedures to fill in the face.



Face to Face Challenges

How many of these programming challenges can you do?

- Add hair and ears to your face.
- Write a procedure that draws a face in a shape other than a circle. How about a RECTANGLE.FACE procedure? Or a SQUARE.FACE procedure? For a real challenge, write a TRIANGLE.FACE procedure!
- Write procedures to make eyes, noses, and mouths with different shapes. Mix and match the face parts and face outlines.
- Compare your Logo faces with those made by classmates. Are any two exactly alike?

Computer Word Search

DIRECTIONS: We found 28 places where computers are used. Can you find them, too? The names of the places are hidden in this word search puzzle. Look across, up, down, and diagonally. If you find and circle them all, the letters that are *not* circled will spell out the punch line to this joke:

Q: What do you get when you cross a computer with a stereo?

A: _____

N A G O V E R N M E N T F L O
O E C I F F O T S O P F A R M
I P W H O S P I T A L D C N P
T F T S I T N E D T A T O Y G
A I M D P I S K R I R I U D R
T R A Y L A B O R A T O R Y O
S E R O U C P Y V A N U T H C
N H I K A R R E T A G H O M E
I O N N I A L S R S N T F D R
A U E A R A E M T O E A L L Y
R S S B G C Y O N L F C A O S
T E I E I Y R O T C A F W O T
E L N L R E T A E H T T I H O
O C O I D U T S E I V O M C R
Y P H O N E C O M P A N Y S E

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ANSWER: See page 51 of your teacher's copy of *Teaching and Computers* magazine.

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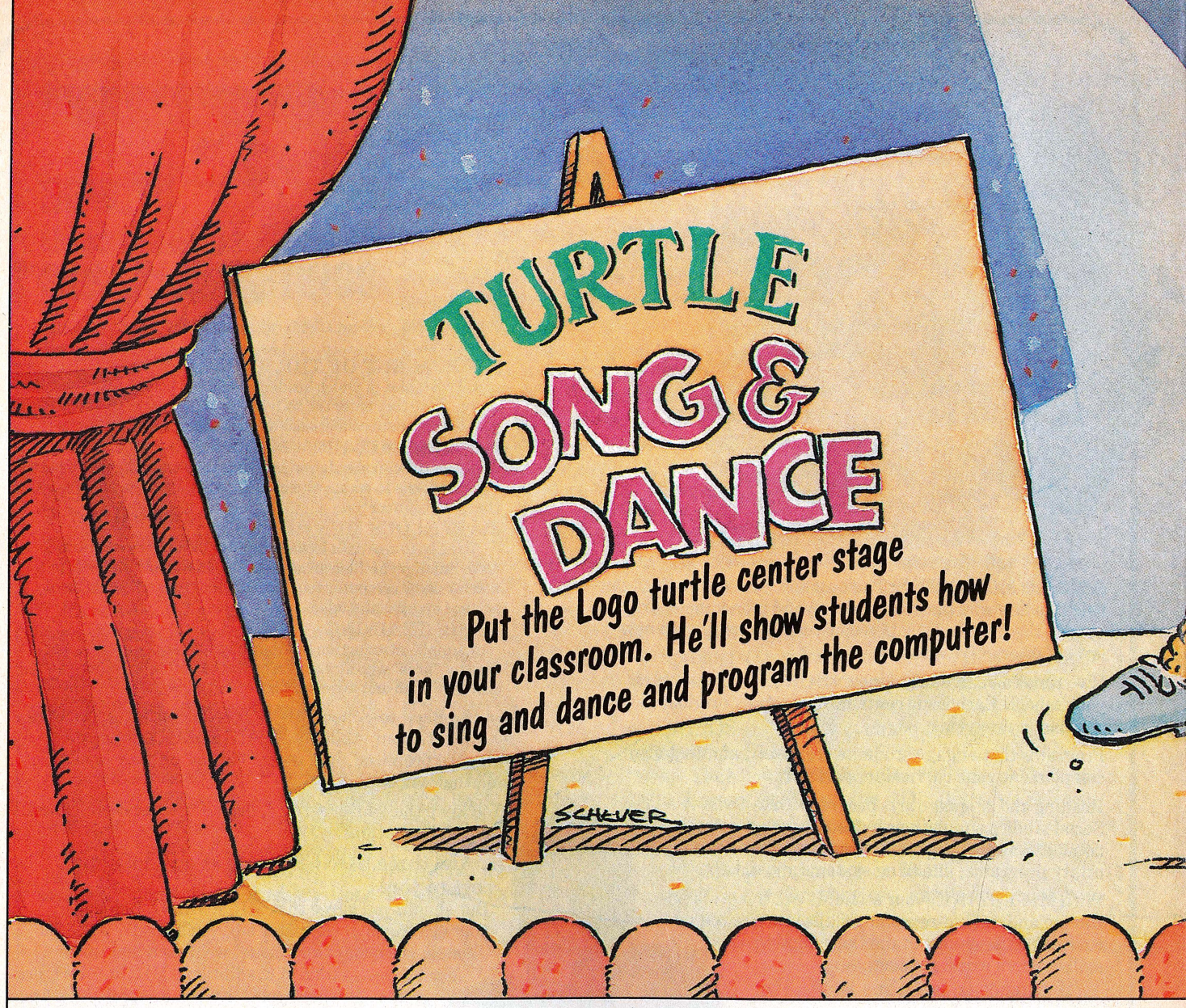


It's opening day at school and guess who's the star attraction? The Logo turtle, of course! For his September debut, this talented crowd pleaser will introduce children to two of the finest arts: song and dance. He'll also toss in a little Logo programming practice — just to keep kids on their toes!

Act I begins with a show-stopping tune called "Meet Our Friend, the Logo Turtle." The words to the song review how to use turtle graphics commands to draw a square, triangle, and house on the computer screen. Kids learn how to sing the song, and then add their own verses describing the steps for making circles, rectangles, and other shapes.

After a brief intermission, students will be ready for Act II, a programmed dance starring "Twinkle Toes" himself — the Logo turtle! In this activity, kids watch our triangular friend execute a simple dance on the computer screen, choreographed to the familiar tune "Twinkle, Twinkle, Little Star."

As the turtle jumps, leaps, and spins his way across the computer screen, youngsters will learn a few basic ballet steps. They will then use the dance step procedures to program their own turtle dance, complete with an appreciative bow at the end. (The Turtle Dance procedures will work for Apple, Commodore, Krell, Terrapin, and other major versions of Logo.)

ACT 1

SING A SONG ABOUT LOGO

Objectives: Students learn to sing a song called "Meet Our Friend, the Logo Turtle." The words to the song describe how to use Logo to make a square, a triangle, and a house.

Prerequisites: No Logo prerequisites. However, you or an assistant must be able to read music.

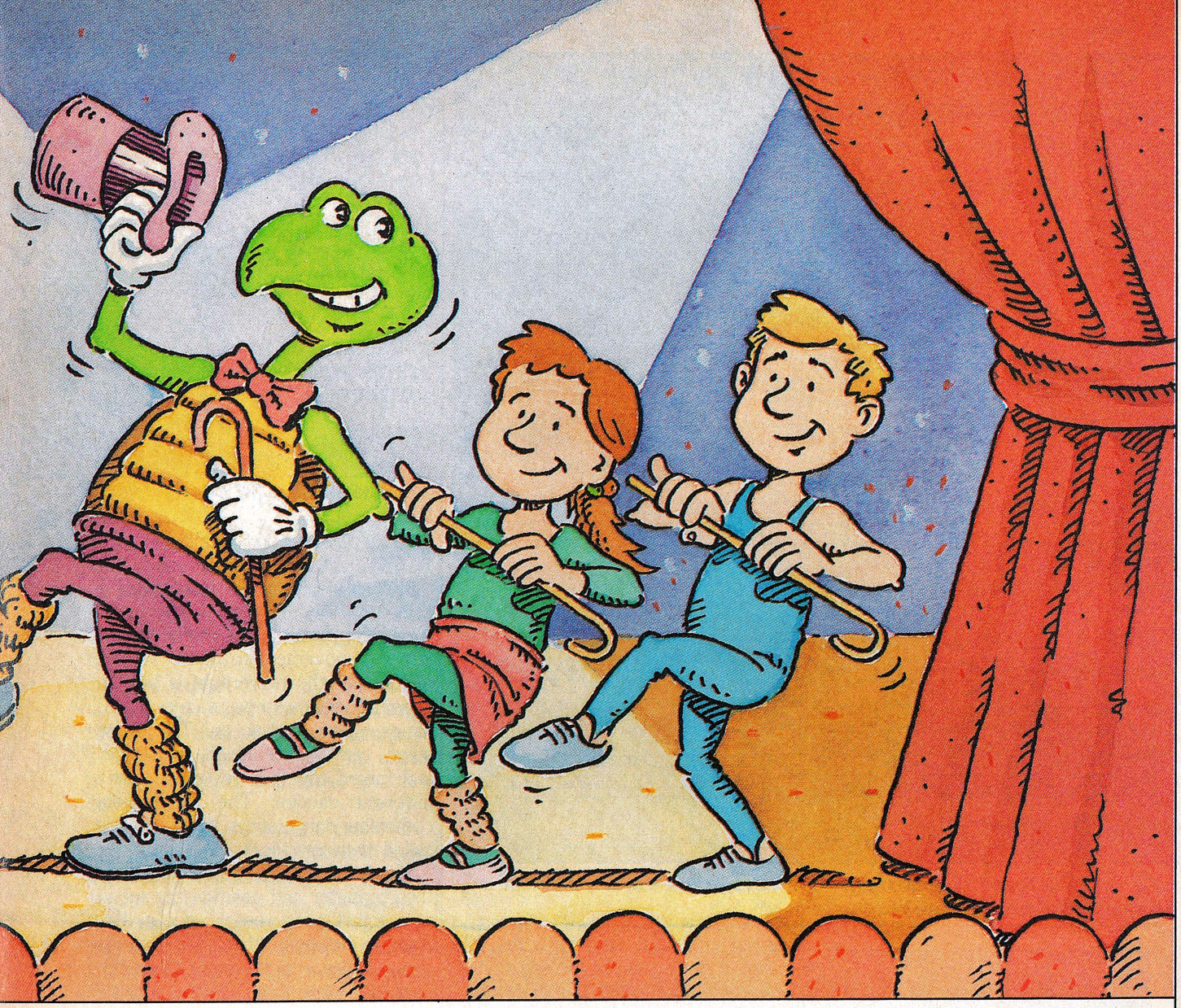
Preparation: Copy and distribute the "Meet Our Friend, the Logo Turtle" song on page 40.

Activity: Sing the first verse of the "Meet Our Friend" song twice by yourself to familiarize students with the melody and words. Ask students to join in as you sing the verse a third time.

Discuss the words to the song. Explain that in the Logo programming language the command FORWARD 50 tells the turtle (the triangular shaped cursor) to go forward 50 "turtle steps" on the computer screen. A turtle step is about the size of a dot. Draw a small dot on the chalkboard as you explain turtle steps.

Also explain that "turn right 90"

Philip Scheuer

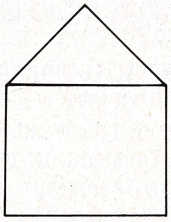


means that the turtle will make a quarter turn to the right. (A full turn is 360 degrees.) Demonstrate how to do this by rotating your body 90 degrees to the right.

Ask kids how many times the turtle goes forward and then turns right in the first verse. *(Four.)* What shape is the Logo turtle making in the first verse? *(A square.)* Demonstrate how the turtle draws a square by following the turtle's directions and drawing a square on the chalk board.

Sing the second verse of the song to the children. Then ask students to sing it with you. What shape is the Logo turtle making in this verse? *(A triangle.)* How does he make it? *(He goes forward 50 steps. Then he turns right 120 degrees. He repeats these steps three times altogether.)* Demonstrate how to draw a triangle on the board by following the turtle's directions.

Sing the third verse of the song once by yourself and then a second time with the class. In this verse, the turtle uses the square and triangle to draw a house. Draw the house on the board by following the directions in the song. It should look something like this:



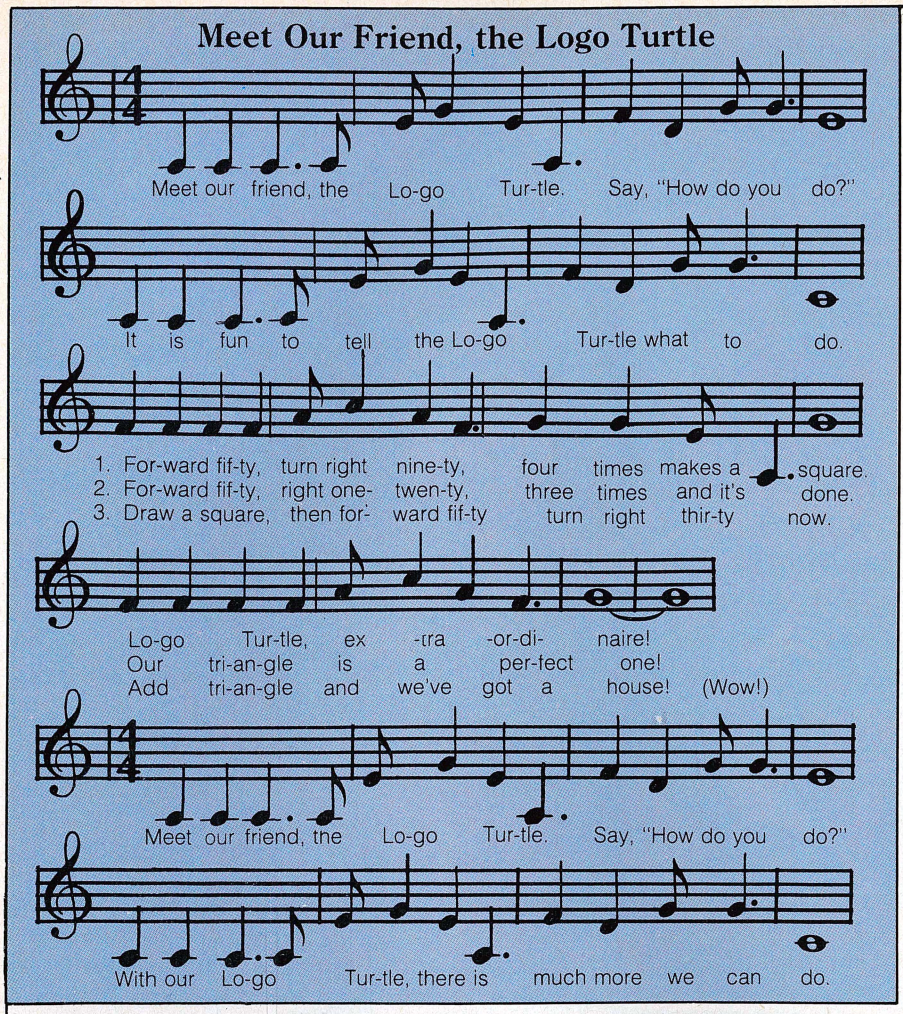
Extensions: (1) Have students write Logo procedures to make a square, triangle, and house on the computer screen. Here is a possible solution:

```
TO HOUSE
  SQUARE FD 50 RT 60
  TRIANGLE
END

TO SQUARE
  REPEAT 4 [FD 50 RT 90]
END

TO TRIANGLE
  REPEAT 3 [FD 50 RT 120]
END
```

(2) Challenge students to add more verses to the song. The verses could describe how to make a circle, rectangle, or other shape using Logo procedures. (3) Ask advanced students to program the computer to play the "Meet Our Friend" song. Here is a sample Terrapin Logo procedure to play the first line of the song. (Students' durations for the notes will vary.)

```
TO TURTLE.SONG
  PLAY [1 1 1 1] [80 80 100 20]
  PLAY [5 8 5 1] [20 80 80 100]
  PLAY [6 3 8 8] [80 80 20 100]
  PLAY [5] [280]
END
```

(continued)



The "Meet Our Friend" song describes how to use Logo to draw a square, a triangle, and a house on the computer screen.

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ACT 2

CHOREOGRAPH A TURTLE DANCE

Objectives: Students program the Logo turtle to execute a simple dance to the song "Twinkle, Twinkle, Little Star." The activity familiarizes students with several ballet steps and with the basic principles of dance choreography. It also encourages children to use modular programming techniques and to think creatively. (In modular programming techniques, programmers write a program in "modules," or units that each do a specific task.)

Logo Prerequisites: Students must know how to define and edit procedures.

Preparation: Load the Logo language disk into the computer. (Almost any major version of Logo is suitable.) Enter the following dance step procedures and save them under the file name DANCE. For more advanced students, substitute the following ballet terms for the dance step procedure names: TO JETE for TO JUMP, TO GRAND.JETE for TO LEAP, TO PIROUETTE for TO SPIN, and TO CHAINE for TO SPINS. To make the turtle dance, type TWINKLE and press RETURN or ENTER.

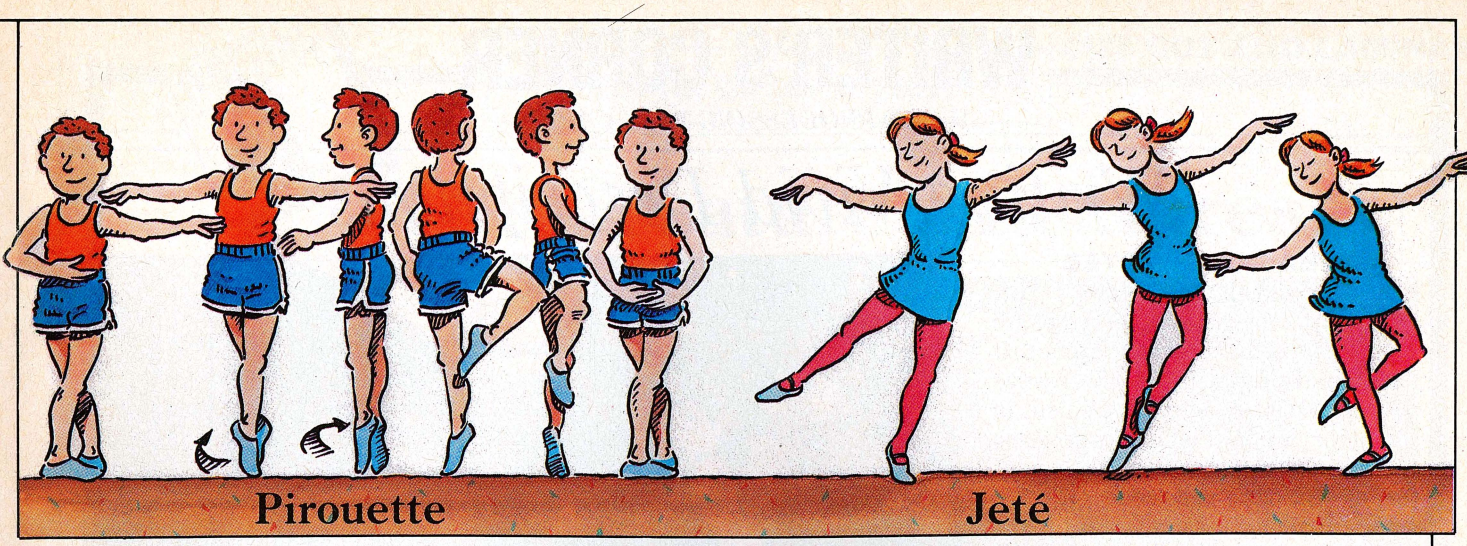
```
TO TWINKLE
  PU PR [TWINKLE, TWINKLE,]
  LEAP.RT PR [LITTLE STAR.]
  REPEAT 2 [JUMP.RT] PR [HOW I WONDER]
  LEAP.RT [WHAT YOU ARE]
  REPEAT 2 [JUMP.RT]
  PR [UP ABOVE THE WORLD SO HIGH]
  PR [LIKE A DIAMOND IN THE SKY.]
  RT 90 REPEAT 8 [SPINS]
  PR [TWINKLE, TWINKLE,] LEAP.RT
  PR [LITTLE STAR.] REPEAT 2 [JUMP.RT]
  PR [HOW I WONDER] LEAP.RT
  PR [WHAT YOU ARE.]
  REPEAT 2 [JUMP.RT]
END
TO JUMP.RT
  SETH 0 REPEAT 9 [FD 2 RT 20]
  FD 2 SETH 0
END
TO JUMP.LT
  SETH 0 REPEAT 9 [FD 2 LT 20]
  FD 2 SETH 0
END

TO LEAP.RT
  SETH 0 REPEAT 18 [FD 2 RT 10]
  FD 2 SETH 0
END

TO LEAP.LT
  SETH 0 REPEAT 18 [FD 2 LT 10]
  FD 2 SETH 0
END

TO SPINS
  FD 5.6 REPEAT 15 [RT 24]
END

TO SPIN
  REPEAT 36 [FD 10]
END
```

Activity: Explain to students that *dance* is movement to music. In formal dance, the movement is broken down into dance steps, such as leaps, jumps, spins, and so on. The dance steps can be combined, repeated, and mixed together to create many different dances. The process of combining dance steps into dances is called *choreography*.

Load the DANCE procedures into the computer and position the monitor so that everyone can see it. Explain to students that the turtle is going to dance to the song "Twinkle, Twinkle, Little Star." Type TWINKLE and press RETURN or ENTER. The words to the song will appear on the screen as the turtle begins to dance. Sing the song in time to the turtle's dance.

Tell students that you are going to run the program a second time. This time, they should identify individual dance steps that the turtle performs. Run the TWINKLE procedure again. Then ask students if they can identify the individual dance steps that the turtle did. Students will observe that the turtle made small and large "jumps" (semi-circles), spun around, and did a series of spins across the screen.

For more advanced students, introduce the technical ballet terms for these movements. A *jeté (zhə-TAY)* is a short jump from one foot to another in any direction. A *grand jeté* is a broad leap from one foot to another in any direction. A *pirouette (pir-ə-WET)* is a complete rotation of the



The "Turtle Dance" activity introduces students to a few basic ballet steps, including the Pirouette, Jeté, Grand Jeté and Chainé.

body, executed on the ball of one foot. A *chainé (shay-NAY)* is a series of short, fast spins that carry the dancer across the stage. Let students try these dance steps themselves!

Then explain that each of these dance steps corresponds to a Logo procedure. Run each dance step procedure individually. (Type the name of the procedure and press RETURN or ENTER.)

Then run the TWINKLE procedure one more time. Point out that each dance step is performed to a specific portion of the song (see illustration). For example, the turtle does a large leap to the words "Twinkle, twinkle" and two small jumps to the words "little star." He then does another large leap to the words "How I wonder"and two small jumps to the words "what you are." Next, he does a series of spins across the screen to the words, "Up above the world so high" and another series of spins to "Like a diamond in the sky." Finally, he repeats the big-leap-two-small-steps sequence for the rest of the song.

Explain to students that by combining the dance step procedures in different orders or by repeating them a different number of times, students can make the turtle perform many new and complex dances.

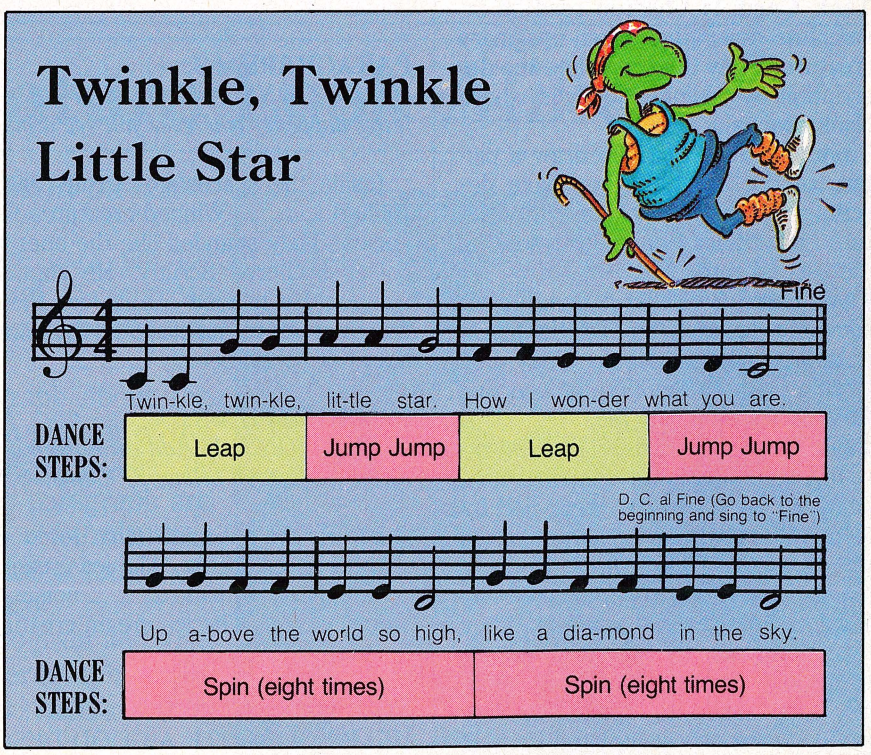
Provide students with a printout or copy of the DANCE procedures. Tell them to use the procedures to choreograph a new "Twinkle, Twinkle" dance for the turtle. If students know how to read music, have them write the dance steps under a musical score of the song, as shown in the illustration.

Extensions: (1) Encourage students to write other dance step procedures for the turtle to execute. For example, a *relevé (roe-løv-AY)* is a jump straight up onto the balls of the feet and then a drop back down into position. A *glissade (glee-SAHD)* is a smooth slide from one foot to the other. Books on ballet, tap, soft shoe, and other styles of dance will provide more ideas. (2) Have children write a BOW procedure that makes the turtle bow at the end of the dance. Here is a sample procedure for Apple Logo:

```
TO BOW
  SETH 0
  REPEAT 3 [HT RT 180 ST WAIT 120 HT
  RT 180 ST WAIT 15]
END
```

(3) Challenge children to program the turtle to dance to other pieces of music. Possible songs include "Mary Had a Little Lamb," "This Old Man," and "Hot Cross Buns."

Tom Lough, editor of *The Logo Exchange* magazine (Meckler Publishing Co., Westport, CT) wrote the "Meet Our Friend, the Logo Turtle" song. ***Evelyn Dale***, a K-12 Logo teacher and consultant for schools in the Sacramento-San Francisco area, wrote the "Choreograph a Turtle Dance" activity.



Students program the Logo turtle to dance to "Twinkle, Twinkle Little Star." The procedures produce the dance pattern above.

WRITER'S CORNER

WORD PROCESSING TASK CARDS

Writing Vivid Descriptions

TEACHER'S NOTES

Each month, the "Writer's Corner" column supplies you with four student activity cards that provide practice with creative writing skills. A different element of creative writing is explored each month. This month's focus is on writing a good description.

Each column requires you to create a data file. You may want to save each file on the same diskette.

PREPARATION

1. Cut out and laminate the four task cards on the pages that follow.
2. Using a word processor, type the data file that appears on this page.
3. Save the file on a blank diskette under the file name CREATURE.
4. Before you have your students use this month's task cards, you may want to teach or review these terms: *description, adjective, adverb.*
5. Your students will also need to know how to INSERT and DELETE text using your word processing program.

TASK CARD ACTIVITIES

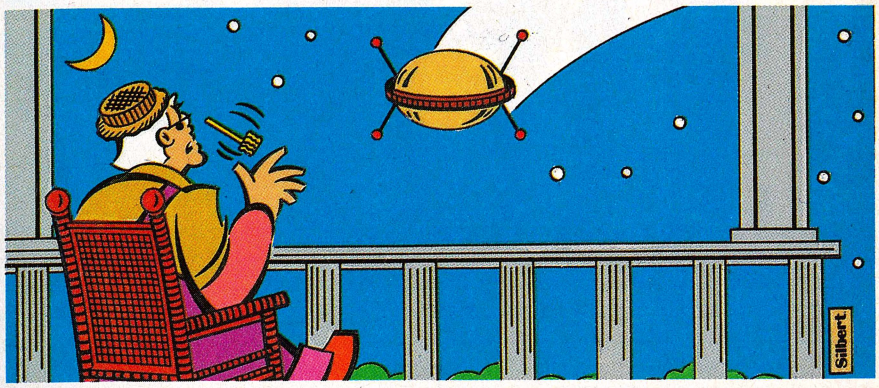
Task Card 1: Children read an incomplete description of an imaginary creature. They then complete the description by adding adjectives where blank spaces are given.

Task Card 2: Children draw a picture of the creature they have described. They then compare this picture (in writing) to one illustrated on the second card.

Task Card 3: Children read an incomplete description about the inside of an imaginary spaceship. They then complete the description by inserting adverbs into the data file.

Task Card 4: Children read an incomplete paragraph about what happens when a dog named Scruffy meets the imaginary creature inside the spaceship. They first complete the description in the paragraph by adding adjectives and adverbs. They then complete the story, being as descriptive as they can. Finally, children are asked to draw a picture based on the now completed story.■

BY JACKIE GLASTHAL



CREATURE DATA FILE

PARAGRAPH #1:
DIRECTIONS: Add an adjective (a word that describes a person, place, or thing) wherever you see a blank space in the paragraph below.

When the door of the _____ spaceship opened, the scent of _____ ice cream filled the air. Suddenly, a _____ being appeared in the doorway. It was in the shape of a(n) _____ ice cream cone! Two _____ legs stuck out from the bottom of the cone. The eyes, nose, and mouth were shaped out of _____, _____, and _____ gum balls. The hair was made out of _____ sprinkles. The creature did not know how to talk. Instead it made _____ noises. As Mr. O'Donnell moved closer to the creature, the air became very _____.

PARAGRAPH #2:
DIRECTIONS: Add an adverb (a word that tells where, when, or how something happens) wherever you see a blank space in the paragraph below.

Inside the spaceship, Scruffy saw a lot of activity. Red and white lights blinked _____. Winged creatures flew _____. He listened _____ to funny noises. They sounded like the ones he heard in pinball machine arcades. The noises bothered Scruffy. He scratched his head _____. His paws shook _____. He headed _____ for the exit to the spaceship. Suddenly the ice cream creature appeared at the door of the spaceship. "What are you doing here," it asked Scruffy _____.

PARAGRAPH #3:
DIRECTIONS: 1) Add an adverb or adjective wherever you see a blank space in the paragraph below; 2) Complete the story yourself.

Scruffy did not know what to do. His _____ fur stood on end. He backed _____ into a corner. The ice cream creature moved _____. It stuck out its _____ hand. It made _____ noises. Scruffy was too scared to move. He just stood _____. The ice cream creature saw that Scruffy was scared. It began to laugh _____.

NOW YOU FINISH THE STORY! USE ADJECTIVES AND ADVERBS TO HELP YOU WRITE A GOOD DESCRIPTION OF WHAT HAPPENED.

Use a word processing program to create the file above.

CUT OUT AND LAMINATE

WRITING 1

TOPIC: DESCRIPTION

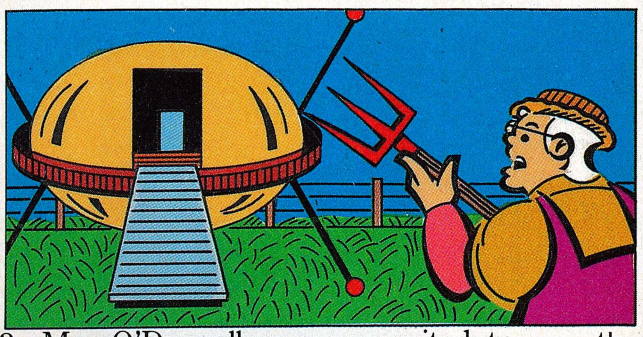
The Creature's Features

U.F. O'Donnell was sitting on his back porch one sunny afternoon when a spaceship landed on his lawn! He was all by himself. "No one will believe this!" he thought as a creature climbed out of the spaceship.

"But, *maybe* someone will," he decided, "if I can give a good description of it."

What does Mr. O'Donnell mean by *description*? Description is a process that lets the five senses (sight, sound, smell, taste, and touch) come alive in words. The better the description, the more believable the story.

1. Boot up your word processing program. Load the data disk and call up the CREATURE data file.
2. Read Paragraph #1 in the data file. It is part of a description of the spaceship creature that Mr. O'Donnell saw.



3. Mr. O'Donnell was so excited to see the creature, that he couldn't finish any of the sentences he wrote to describe it. He left out many adjectives *(words that describe people, places, or things)* from his sentences. Use your word processing software to insert an adjective wherever you see a blank space in the paragraph.
4. Save your work on a blank disk. We will call this disk your personal disk.

WRITING 2

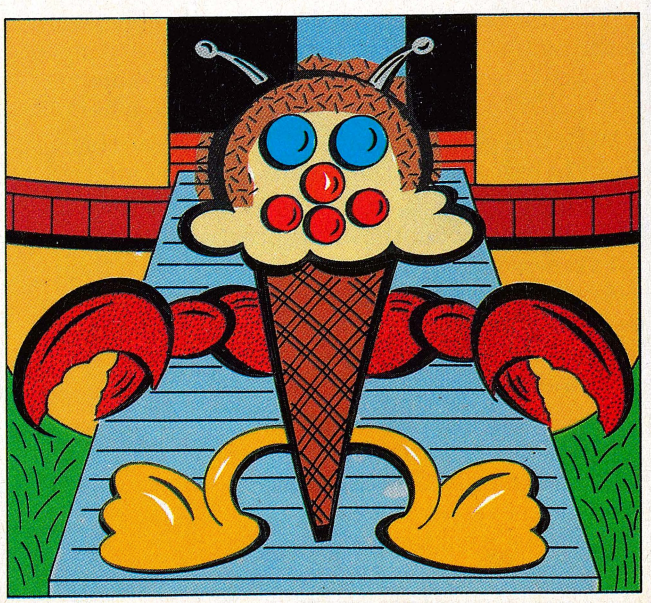
TOPIC: DESCRIPTION

Creature Look-Alikes

Complete Task Card 1 before you try the activities on this card.

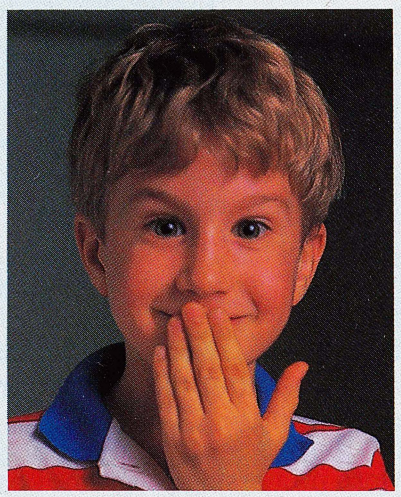
By filling in the blanks in the data file for Paragraph #1, you have created a complete description of Mr. O'Donnell's ice cream creature.

1. Reread the completed paragraph about the ice cream creature. Then draw a picture of the creature on paper. The descriptive words, or adjectives, that you added to the paragraph are important ones to look at as you are drawing.
2. Compare your picture of the ice cream creature with the one on this task card.
3. Boot your word processing program and load your personal disk. Write a paragraph about how the two creature pictures are alike and how they are different.
4. Save your work on your personal disk.



Bill Silbert

"My computer just talked to me!"



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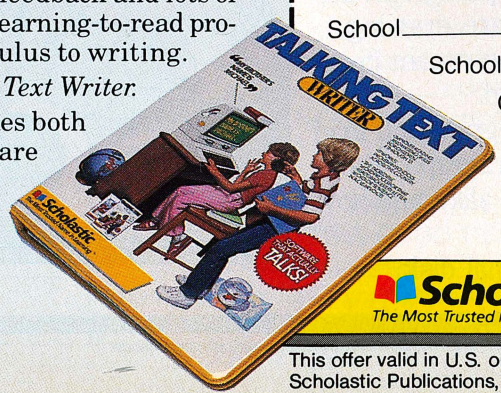

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CUT OUT AND LAMINATE

WRITING 3

TOPIC: DESCRIPTION

Scruffy Meets The Creature

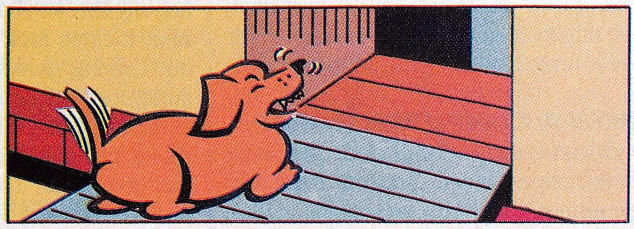
Complete Task Card 2 before you try the activity on this card.

U.F. O'Donnell read his description of the ice cream creature to his dog, Scruffy. He also showed Scruffy a picture that he drew of the creature. Scruffy did not believe a word Mr. O'Donnell said.

"Mr. O'Donnell," Scruffy said, "only seeing is believing."

So Mr. O'Donnell took Scruffy into the backyard where the spaceship still stood. The door to the spaceship was open, but the ice cream creature was nowhere in sight. Scruffy decided to take a look inside the spaceship.

1. Boot up your word processing program. Load the data disk and call up the CREATURE data file.
2. Read Paragraph #2 in the data file. The paragraph is part of a description of what Scruffy saw inside the spaceship.
3. Being a dog, Scruffy is not the best of storytellers. Help Scruffy out by adding an adverb (*a word that tells where, when, or how something happens)* wherever you see a blank space in the story. Here's a tip to help you out: many adverbs end with the letters *-ly* or *-ily*.
4. Save your work under the paragraphs already stored on your personal disk.



WRITING 4

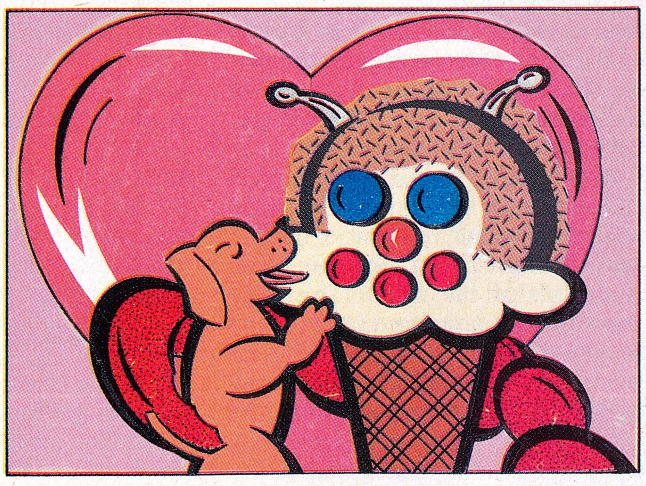
TOPIC: DESCRIPTION

Finish The Story

Complete Task Card 3 before you try the activities on this card.

As you know, Scruffy was interrupted in the middle of his search through the spaceship by the return of the ice cream creature.

1. Boot up your word processing program. Load the data disk and call up the CREATURE data file.
2. Read Paragraph #3 in the data file. The paragraph describes what happened when Scruffy met the ice cream creature.
3. Complete the paragraph by adding an adjective or adverb wherever you see a blank space in the paragraph.
4. Write the rest of the story of Scruffy and the ice cream creature. Use adjectives and adverbs to help you write a good description of what happens.



5. Save your work on your personal disk.
6. On a piece of paper, draw a picture of Scruffy as he meets the ice cream creature.

Introducing the Computer

One of the most common questions young children ask about computers is "How does a computer work?" To answer this question, the University of Texas, El Paso early childhood education classes piloted the activities that follow. Upon completion of the activities, children in the pilot classes not only understood how a computer works; they also demonstrated responsible and knowledgeable handling of all the computer equipment. These skills helped free their teachers from "computer guarding" duty, and gave the children a sense of control over their new technological learning tool.

HOW A COMPUTER WORKS

Most early childhood teachers have experienced broken toys and equipment in their classrooms. Often these toys were broken by children whose curious minds led them to disassemble the parts. This first computer learning activity is aimed at satisfying curiosity about the computer and its parts so that disassembly isn't necessary! It is also a good way to introduce computer vocabulary.

Preparation: For this activity you will need a computer, disk drive, disk, and monitor. If your computer is not of the Apple II series, you also will need an illustration of a computer like the one on this page.

Activity: Have children sit in a circle on the floor, surrounding the computer. Show them the main parts of computer hardware: the monitor, keyboard, and disk drive.

Ask children how the monitor is different from a TV set. One child will probably tell you that it doesn't have a "turner" for channels. Tell students that the monitor can only show them a program that is in the computer. Then ask them, "Who do you think puts programs into the computer?" If children answer "the teacher," tell them that soon they will also tell the computer what to do.

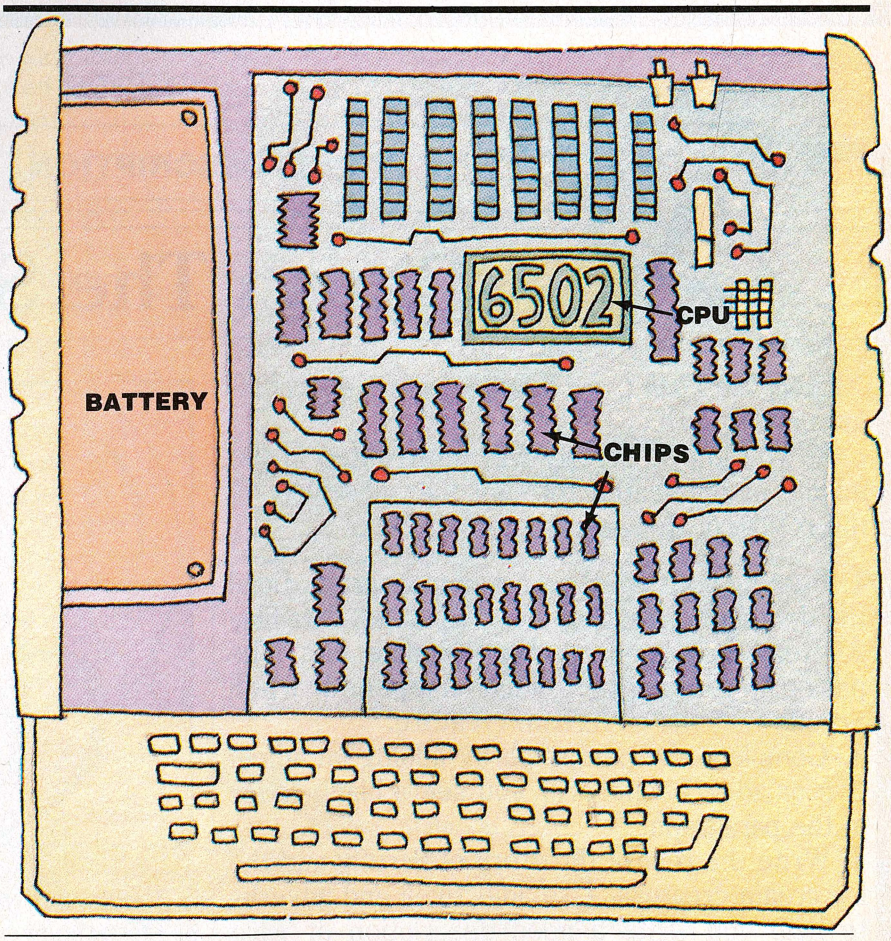
Show children how to turn the monitor on and off. Ask one child to turn on the monitor, and ask another child to turn it off.

Point out that the CPU (Central Processing Unit), or the "brain" of the computer, is inside of the computer. If you have an Apple II series computer, you can actually show the inside of the computer to the class. For other brands of computers, use an illustration like the one on this page to show what's inside of the computer.

To expose the inside of an Apple II series computer, first make sure that the computer is unplugged. Remove the monitor, and lift off the plastic lid behind the keyboard. Let each child take a close look at the inside. Point out the big gold battery. It gives the computer its power. Point to the chips and the CPU. Tell children that these parts work like the "brain" of the computer, to help it "think" and do its work. As you put the top back on tightly, remind children that they are *never* to take the top off themselves. They already know what is inside, so they do not need to open it. Plug in the computer and show them how to turn the computer on and off.

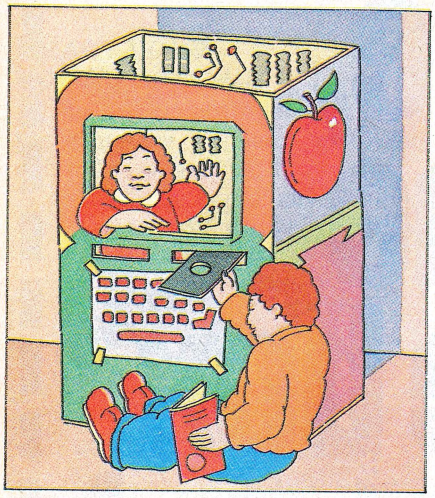
Next, have youngsters take a close look at the keyboard. Let them identify letters and numbers. Tell them that when we type on the keyboard, we tell the computer what to do.

Point out the disk drive next. Tell children that the disk drive is yet another way to tell the computer what to do. We put instructions on a disk that goes in the disk drive. Demonstrate how to put a disk into the drive, but show this only once because children will complete a detailed activity about the disk drive later in this unit.



If you can't open your computer, use an illustration like this to show kids what's inside.

Michael Donato



Introduce kids to hardware by building a Classroom Computer.

BUILDING A CLASSROOM COMPUTER

In this activity, children create a giant "computer" from cardboard boxes. The activity helps develop computer awareness, as well as large and small motor skills and the ability to follow directions.

Preparation: For this activity, you will need a large cardboard box (like one that is used to ship a washing machine or large TV), white posterboard, a shoe box, masking tape, paints (nontoxic), black construction paper, and a black marker.

First, stand the large box upright. (This will serve as computer, monitor, and disk drive.) Cut one side open so that the children can enter it freely. (The open side will be the back of the computer.) On the front top half of the box, draw a monitor screen and cut it out with a knife. Below the monitor, draw two horizontal lines about five and one-half inches in length to represent disk drive slots. Cut the slots with a knife so that the children can insert cardboard diskettes into the disk drive slots. (Diskettes will be made later.)

Draw a keyboard on the posterboard. As you draw squares for the keys, let the children help you fill them in with the letters, numbers, and symbols. Tape the keyboard poster below the disk drive lines.

Give children the shoe box and help them paint it gold so that it will look like the battery inside the computer. Also let them make chips by drawing lines (electrical pathways) on black sheets of construction paper. Have them place the "battery" and "chips" inside of the computer.

Finally, let youngsters paint the computer (the large box) any colors they choose (see illustration).

Activity: After the classroom computer is finished, explain that a computer shows programs on the monitor. Let children take turns being "programs." First, a child must enter his or her program into the computer. Let the child push letters on the poster keyboard to do this. Afterward, have him or her go around to the back of the cardboard computer, get inside where the chips and battery are, and appear on the monitor. As a conclusion to each program, suggest that the child wave to the class through the monitor.

HANDLING A DISKETTE

In this activity, children make "diskettes" and practice loading them into the classroom computer. The activity will help children develop location skills and computer awareness.

Preparation: For each child, you will need two sheets of plain paper (one notebook size; the other, about 11″ x 11″) and a 5 ½″ cardboard-square. Begin by making a print master of the outline of a diskette. The diskette outline should be about 5 ½ inches square. Make a copy for each child.

Have the children paste their paper diskette onto the cardboard to make it stronger. Put each child's name on his or her diskette near the upper right-hand corner where the disk label usually goes.

Pass out the 11″ x 11″ piece of paper. Show children how to fold this paper in half to make a diskette jacket. Have them tape the sides of the jacket closed, leaving the top open to insert the paper diskette.

Activity: Use the classroom computer and the paper diskettes to demonstrate the proper handling of a diskette. Hold up a diskette and explain that the diskette is like a soft, floppy record. Point out that the diskette can be bent, but that students should never do so because the programs written on it would be destroyed.

Explain that diskettes, also called disks, have different kinds of programs written on them, and that some are blank so that we can put our own programs on them. Also tell the class that the programs are called "software," while the rest of the computer parts they've learned about so far are called "hardware."

Demonstrate how to load the diskette into the disk drive slot by using a real computer and disk. Tell students that the first step is to open the disk drive door. Next, they should pick up the diskette. Explain that they should always hold the diskette by the label (point to the label). Tell them that they should not touch the hole in the center or any part of the inside of the diskette that can be seen. Demonstrate how to hold the disk flat, making sure that the label is on top, and tell the class that they should slide the disk gently into the disk drive and then close the door.

Tell children that they must never move a diskette in or out of the disk drive when the red light is on. The red light means that the disk drive is working. Also tell them that they must not touch the keyboard when the red light is on.

Explain to youngsters that they should not eat or drink around diskettes because they might damage them by putting food or water on them. Put the diskette back in its jacket. Tell the class that diskettes should be kept in their storage jackets when not in use. Explain that diskettes should not be put on top of the monitor or left in the sun or cold. Tell children that if they remember all of these things, the diskettes will play and they will last a long time.

Let each child practice removing and putting his or her paper diskette in the jacket. Then let them take turns inserting their paper diskettes into the cardboard computer. ■

Trisha Ainsa is director of the "Computer Literacy in Children" Title VII project at the University of Texas, El Paso.

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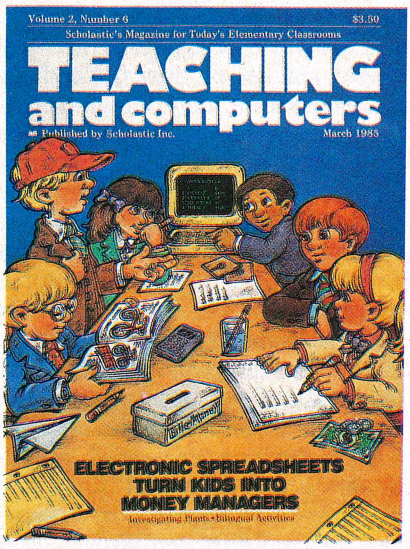

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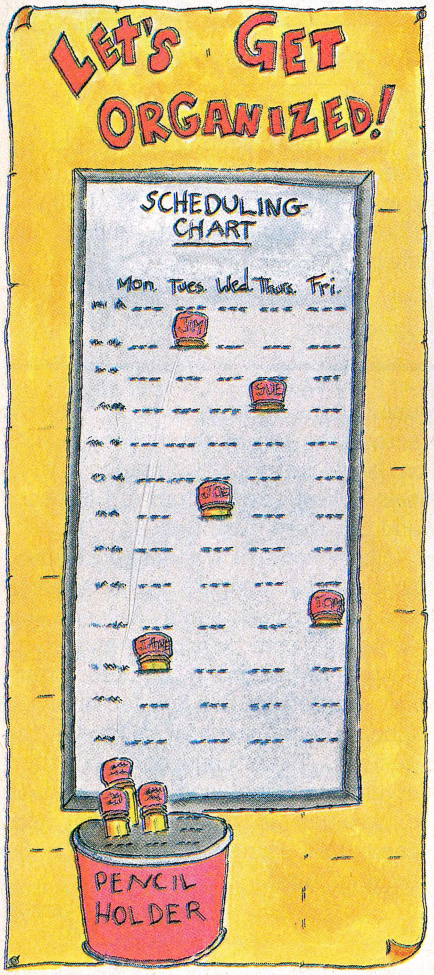
MICRO IDEAS

QUICK COMPUTER TIPS AND ACTIVITIES

CHART YOUR COMPUTER TIME

This bulletin board lets you assign students new computer time slots every day, if you like.

To make the board, cover the entire surface with dark colored construction paper. At the top, in a contrasting color, stencil "Let's Get Organized!"



You can customize the time slots on this bulletin board to meet your needs.

Now draw a scheduling chart like the one in the illustration onto a large sheet (at least 1″ x 2″) of white oaktag. Alter the hours in the left-hand column of the chart to meet your own scheduling needs. Wherever dotted lines appear on the chart, razor out 3/4″-long slits. Leave a space at least 3/4″ wide between each column of slits and a space that is 1 ¼″ wide between each row. Staple the oaktag chart under the lettering.

Make a 5″ pencil out of sturdy paper (see illustration) for each child in your classroom. Write the name of a different student across each "eraser" top. Then laminate the pencils. When scheduling a student for computer time, insert the child's pencil into the proper day and time slot on the bulletin board.

Write students' names on the "eraser."

Keep the pencils belonging to students not scheduled for computer time in an oaktag "pencil holder" (see illustration). Razor out enough slits to hold any unscheduled students' pencils. Staple the "pencil holder" to one side of your scheduling chart.

Jackie Glasthal
New York, NY

CLASSROOM TIME CAPSULE

As a first-day-of-school activity, I have my students use the word processor to write a short essay about themselves. Then I save these essays on a disk.

In the reports, children describe what they look forward to during the school year, their favorite television shows, music groups, foods, sports, etc. I also ask my new students to write a few sentences on topics I know we will cover during the semester. I have kids type their names in at the end of their essays.

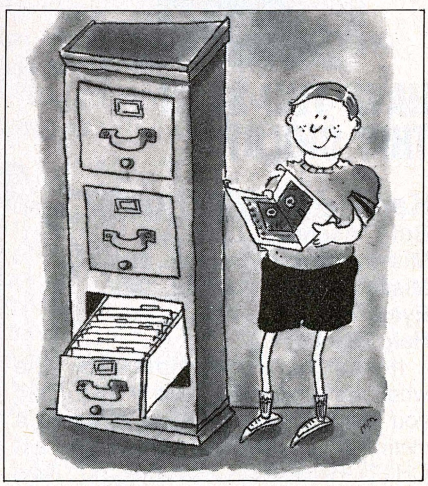
On the last day of school, I ask the children to write an essay at their seats that answers similar questions. Then I boot up the first-day-of-school disk, which I call an *electronic time capsule*, and print out and return the initial essays. It fascinates kids to compare the essays to see how they've changed, and what they've learned during the year.

Laura C. Bullock
Peoria, IL

FOLDERS FOR DISKS

We keep student diskettes in individual hanging folders that are arranged alphabetically in the bottom drawer of a classroom file cabinet. This way diskettes are kept dust-free and students handle only their own disks. The folders are also a good place for kids to keep notes on computer work.

Alison Birch
Cambridge, MA



Hanging folders keep disks neat!

STURDY NAME TAGS FOR LAB STUDENTS

In order to call children by name while in the computer lab, I made a sturdy name tag and holder for each child. (Because I teach more than 1,800 students a year, I've given up trying to learn names!)

I had the card holders made in the school shop. Each holder is 12″ long, 2″ tall, and rests on a computer monitor. The holders are made of wood and resemble Scrabble tile holders.

Before students come to my first lab class, I write their names on 12″ x 4″ index cards. I lean one card against each card holder and place it in front of a computer.

When children enter the lab, they find their name card and take a seat at the adjoining computer.

After class, the index cards can be easily stored and brought out the next time the group meets.

Marianne Hauser Sibley
Riyadh, Saudi Arabia

Michael Moran

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HAVE YOU SEEN THIS CHILD?

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Born: August 8, 1974
Missing From: Brooklyn, NY
Missing Since: April 13, 1980
Eyes: Brown
Hair: Black

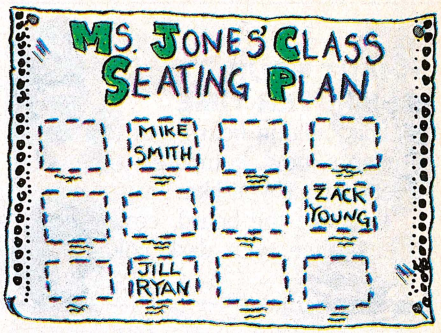
If you have information on the whereabouts of Kali (case #1670), or if you suspect another child of being a victim of abduction, please contact CHILD FIND, INC., P.O. Box 277, New Paltz, NY 12561; 800/426-5678. All information will be handled in strict confidence.

MICRO IDEAS

WORD PROCESS A SEATING CHART

A word processor can help you make a great seating chart for the upcoming school year. First, boot up your word processing program. Then use hyphen keys and lower case *l* s or numeral *1* s to create rectangular shapes on the screen. These shapes represent desks in your classroom. Arrange them according to your planned seating arrangement (see illustration).

Insert a student's name above or inside each "desk," to indicate a child's assigned seat. Save the chart on a blank diskette under an appropriate file name, such as SEATING. If you like, print out the chart and hang it on a wall.



A quick and easy seating plan.

If you make seating changes in the classroom, reboot SEATING. Then use the INSERT, DELETE, SEARCH and REPLACE commands to update the chart.

Joanne Davis
New York, NY

BULLETIN BOARD EXAMINES COMPUTER CONDUCT

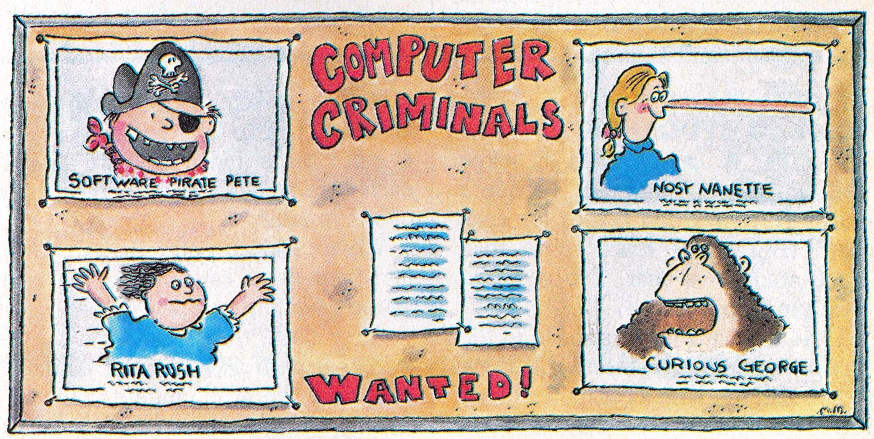
Early in the school year, initiate a discussion about computer ethics and manners. Talk about why it is wrong to look at the contents of another student's diskette without permission or, even worse, to alter the contents of another's disk without first asking. Talk about the correct handling of floppy disks, as well as the importance of keeping a computer center organized and clean.

Use the lessons learned from this discussion as the basis of a bulletin board on conduct in the computer area.

To decorate the bulletin board, cover the entire area with light-colored construction paper. Stencil across the top of the bulletin board, in large letters, "Computer Criminals." Along the bottom of the board add the word "Wanted!"

Pin up one of the sample wanted posters that appears in the illustration on this page. Then challenge students to create their own "mug shot" posters of imaginary computer criminals wanted by the law for breaking other computer center rules. On the posters, have children give their criminal a name and write a short explanation of the crime that was committed. Hang kids' posters on the bulletin board.

Craig Dickinson
Orono, ME



Computer "criminals" remind kids about computer center rules.

MICRO IDEAS

EXPLAIN LOGO MOVEMENT THROUGH MIRROR MIMES

When the Logo turtle faces the bottom of the computer screen, the turtle's right is on the student's left, and vice versa. When kids try to turn the turtle right or left, they often become disoriented.

"Mirror Mime" is a fun off-computer activity that helps clear up this confusion. It also helps develop spatial movement and nonverbal communications skills.

Pick a student volunteer to help demonstrate how to do a mirror mime. Stand in front of him or her, facing the same direction. Tell the volunteer to copy any movements you make. For example, slowly raise your right arm. Then lower it. The student should raise his or her right arm and lower it at the same time.

Next, turn and face the volunteer. Again, raise your right arm. This time, the student should raise his or her *left* arm. Point out to the class that this exercise is like looking in a mirror. When you make a motion, it comes out opposite in the mirror.

Have students perform mirror mimes in partners. Begin with partners facing the same direction, one in front of the other. The person in front moves his or her arms and hands slowly in different directions. The person in back copies the movements. After a few minutes, partners switch roles.

Tell partners to face each other and repeat the exercise. If children become disoriented, tell them to begin again. Advanced students can progress to other body movements.

Discuss the differences between the first and second activities. The first activity is like moving the Logo turtle when it is pointing up; you and the turtle are facing the same direction. Your right is the turtle's right and your left is the turtle's left.

In the second activity, partners are facing in *opposite* directions. This is the case when the turtle is facing down. The turtle's left is your right, and vice versa.

Evelyn Dale
Davis, CA

STAGE A COMPUTER SCAVENGER HUNT

Increase your students' awareness of the role computers play in their everyday lives by turning them into computer scavengers!

Begin the activity by discussing places where computers are used. Some of the places that may be mentioned include banks, department stores, travel agencies, and other businesses.

Next, send your students on a "scavenger hunt" in search of as many items generated by a computer as they can find. Items that students may find in the hunt include bills, library cards, junk mail, report cards, and receipts. At the end of the hunt, have students explain a few of their more interesting findings to the rest of the class.

You can create a colorful exhibit of the items found in the scavenger hunt by coloring the items in different shades and displaying them on a bulletin board.

Laura C. Bullock
Peoria, IL

COMPUTER HOT LINE

Has your home phone ever rung at night because one of your students called with a computer question? Mine doesn't any more since two of my star computer students established a "computer hotline" to handle questions from their classmates.

The boys encouraged their fellow classmates to call if they got stuck on their computer homework and needed questions answered. Soon even students from other classes began calling the "hotline" with questions.

The boys are now saving up for modems, with dreams that their successful "hotline" can one day go "online!"

Craig Dickinson
Orono, ME

SEND US YOUR MICRO IDEAS

Do you have computer activities, bulletin board ideas, or other tips to share? Send them to "Micro Ideas," *Teaching and Computers*, 730 Broadway, New York, NY 10003. ■

ANSWERS TO "MICRO TIMES"

Maps: From Clay to Computers (page 1a)

Here are answers to the review questions:

1. Early maps were made of clay, wood, ivory, and cloth.
2. Early maps were hard to use (bulky and heavy), hard to read (poorly labeled), and often inaccurate. Also, it took a long time to carve maps out of clay, ivory, or wood; or to print them on cloth.
3. Computers can make maps faster, easier, and more accurately.
4. Computer-made maps show many details. Also, the computer can add colors to make certain features stand out.

Face to Face Program (page 3a)

Here is a sample procedure to make a face. Students' answers will vary.

```
TO HAPPY.FACE
  HT ROUND.FACE
  PU SETX 20 SETY 30 EYE
  PU SETX 80 SETY 30 EYE
  PU SETX 70 SETY 5 NOSE
  PU SETX 112 SETY 12 MOUTH
END
```

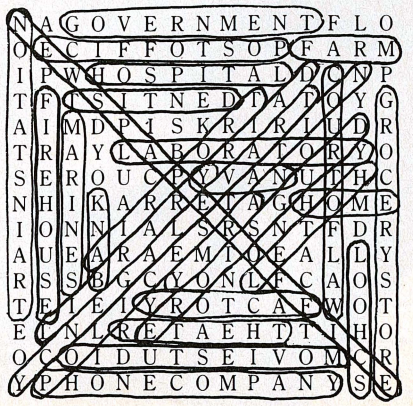
Bug Busters! (page 2a)

Here is the corrected program.

```
NEW
 10 PRINT "MY FRIENDS"
 20 PRINT "ANGELA"
 30 PRINT "BEN"
 40 PRINT "CARRIE"
 50 PRINT "DARRYL"
 60 PRINT "ELIZABETH"
 70 PRINT "FRED (THAT'S ME!)"
 80 PRINT "GARY"
 90 PRINT "SUE"
 100 PRINT "JOHN"
 110 END
```

In Search of Computers (page 4a)

The punch line is to the joke is: "A floppy disk you can dance to."

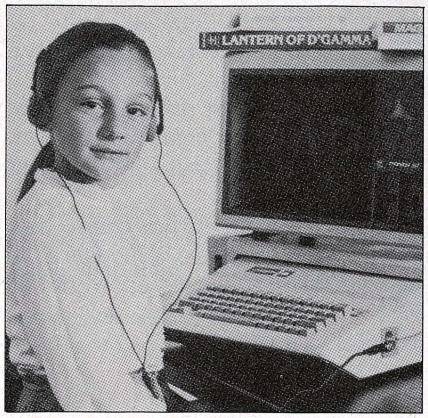


TOOLS OF THE TRADE

NEW AND USEFUL COMPUTER PRODUCTS

HEADPHONES FOR QUIET LISTENING

If the sound effects from some of your Apple II, II+, or IIe software programs can't be turned off, and the sound is disturbing other children in your classroom, LittleJack may be right for you.

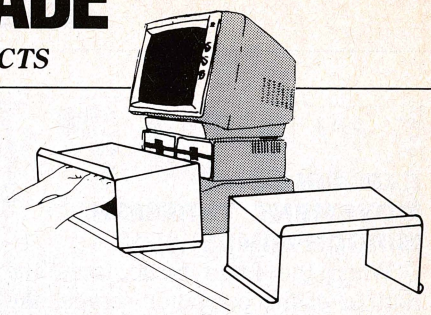


LittleJack is a headphone set equipped with a specialized jack that plugs into your Apple computer. The headphones allow students to listen to the sound effects of computer programs without disturbing other students working in the classroom. The headphones also serve as an aid for the hearing impaired.

Included in the LittleJack package is an adapter that allows up to eight students to "listen" on separate headphones to the same computer. Any brand of school headphone listening sets may be used with the adapter. The product needs no tools to be installed.

Price: *$24.95 includes one set of headphones, jack, and adapter.* Contact: *Educational Software Review, 1400 Shattuck Ave., Suite 774, Berkeley, CA 94709; 415/528-2788.*

(Circle 2 on Reader Service Card.)



NO-PEEK KEYBOARD SHIELD

The No-Peek Shield makes it impossible to "peek" at the keyboard while typing. The shield is a plastic structure that fits over any Apple II series or Commodore keyboard. When the shield is in place, children cannot see their hands as they type, forcing them to use touch-typing skills. The shield is self-standing.

Price: *$12.95 each, plus $4.50 handling charges per order.* Contact: *Advanced Learning Systems, P.O. Box 56, Eugene, OR 97401; 503/343-6636.*

(Circle 3 on Reader Service Card.)

LOGO AND WORD PROCESSING—ALL IN ONE

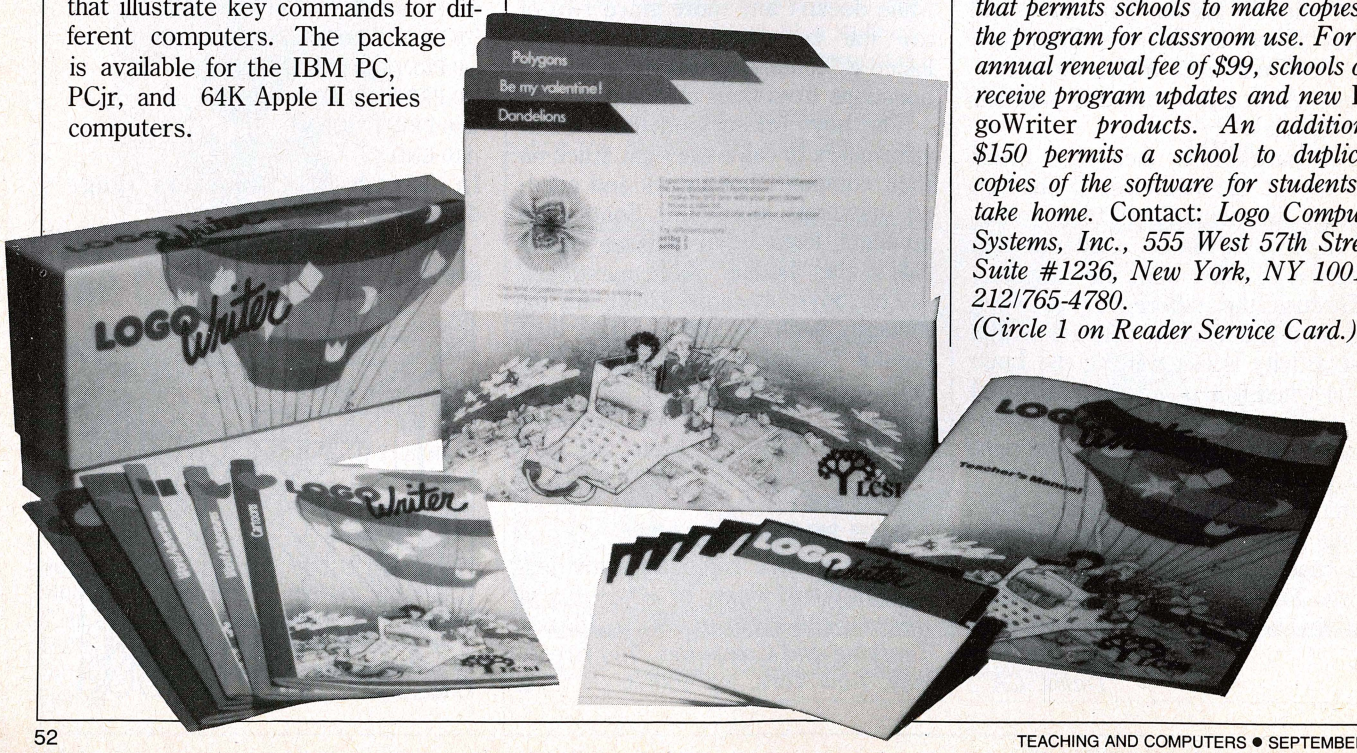
Inside a *LogoWriter* package you'll find a set of diskettes that contains a *LogoWriter* master program as well as utility and tutorial programs. You'll also find six project booklets, accompanying activity cards, a teacher's manual, a programming reference guide, posters, and keyboard stickers that illustrate key commands for different computers. The package is available for the IBM PC, PCjr, and 64K Apple II series computers.

LogoWriter is a software program that combines word processing capabilities with Logo, and is designed for grades K–8. A child can write, edit, draw, make music, *and* program; all with this one master program. For example, a child can use Logo to draw a boat on the screen and then actually write a story or poem *within* that picture. Pictures and shapes can also be programmed to move about the screen.

An additional utilities diskette enables you or a student to convert files to *LogoWriter* from previous versions of Logo, or from some popular word processing programs. The tutorial disks included with the package will introduce beginners to *LogoWriter.*

Price: *$395 includes school site license that permits schools to make copies of the program for classroom use. For an annual renewal fee of $99, schools can receive program updates and new* LogoWriter *products. An additional $150 permits a school to duplicate copies of the software for students to take home.* Contact: *Logo Computer Systems, Inc., 555 West 57th Street, Suite #1236, New York, NY 10019; 212/765-4780.*

(Circle 1 on Reader Service Card.)



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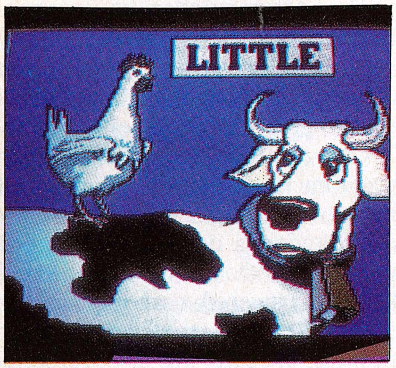
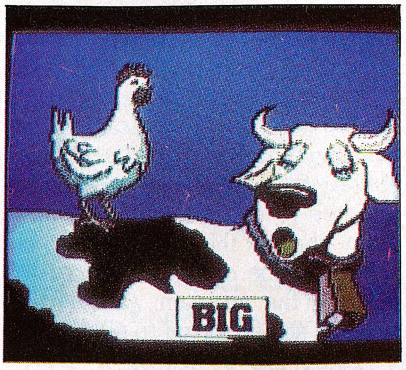
SOFTWARE SHOWCASE

SOFTWARE RECOMMENDED FOR TEACHERS, BY TEACHERS



The chicken is little...



And the cow is big!

CITY COUNTRY OPPOSITES

Computer: Apple II series
Topics: Word recognition, opposites
Grade Level: K–2

Meet Lester and Lionel! Lester is a country mouse, and Lionel is a city mouse. In *City Country Opposites,* Lester, Lionel, and their animal friends participate in 20 animated sets of opposites. Each set of graphics has a city or a country theme behind the action.

To start the program, children press the space bar or return key. A word comes up, along with graphics (and sometimes sound) that demonstrate its meaning. For example, the word *forward* may appear on the screen along with graphics of Lester driving a tractor forward. By pressing the arrow key on the far right, children would then see the opposite animation. The word *backward* would appear on the screen along with graphics of Lester driving the tractor backward.

The objectives of this program are simple: to help children associate words with their meaning as well as with their opposite meaning and its corresponding word.

The graphics and animation in *City Country Opposites* are wonderful. Kids can watch a country mouse make his tractor "stop" and then "go;" and then in the next animation set, see a city mouse operate a jack hammer at a "fast" and then "slow" speed.

The documentation that accompanies the program is super. There is an easy-to-understand instruction booklet for the noncomputer user that describes special features of the program (such as how to turn the sound off). A second booklet includes activity ideas, a "dictionary" of all sets of opposites used in the program, and reproducible worksheets that relate to the characters and activities on the screen.

One potential problem with the program is that children may get bored seeing the same 20 animation sets over and over. I also wish that the user had some control over the sequence of sets. The user is allowed only to cycle through them at random.

Price: $39.95
Policy: $10 backup; 30-day preview
Source: Random House, 201 East 50th Street, New York, NY 10017; 212/751-2600

Evelyn Woldman, Adjunct Faculty
Lesley College, Cambridge, MA

STICKYBEAR MATH II

Computer: Apple II series
Topic: Math
Grade Level: 3–6

Although *Stickybear Math II* is a drill-and-practice program covering multiplication and division, it never commits the sin of being merely an automated workbook page. Its authors had excellent insight into the needs of the classroom teacher, and this insight is reflected in the wide variety of options that may be exercised to tailor the program to specific needs.

Before the program begins, the

(continued)

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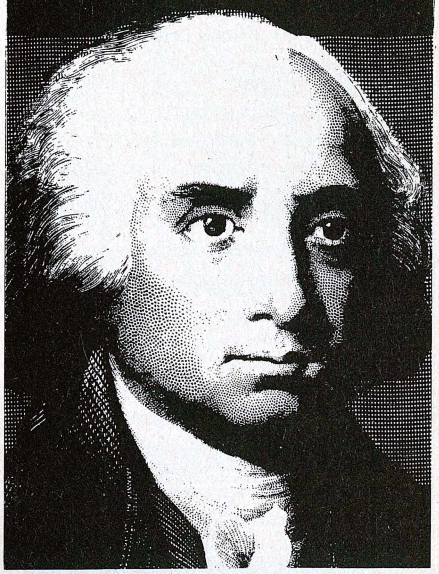

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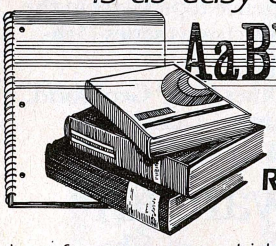

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SOFTWARE SHOWCASE

(continued from page 53)

teacher (or parent) can access a "Teacher/Parent Option" section. (Students cannot access this section because the prompt does not appear on the screen. The appropriate commands are described in the documentation only.) This section allows the teacher to enter a child's name and then choose the type and level of problems the child will receive when running the program. (Specifications may be stored for up to 40 students.)

There are 36 levels of difficulty, ranging from simple one- and two-digit multiplication problems that use pictures as clues to the answers, to problems in which kids divide by a two-digit number to get a three-digit answer. The teacher may also choose to present multiplication only or division only, and may turn the sound on or off.

The format of the program is such that it always displays the math problem in the middle of the screen and scorekeeping graphics at the bottom. If the problem is answered correctly, the student is rewarded with a graphic display, such as a ball that bounces into a machine and changes the child's score.

The teacher may choose to have students show their math for the long division problems. With this option, a student begins by typing in a digit above the dividend. The cursor then automatically moves to the next typing position in the problem, and so on. The program also brings up remainders automatically.

The number of options and their ease of use is exceptional. The teacher can even choose to include problems that require the student to fill in the missing middle (factor) of a problem (for example: 3 x = 12).

When each student is finished with the program, his or her score can be saved on a "report card" that can be reviewed by the teacher at any time. The report card includes starting level, the level when stored, number of problems completed correctly, number attempted, and percentage correct. The next time a student boots the program, he or she will begin at the same difficulty level at which the previous player left off.

The documentation is extremely thorough and clearly written. Teachers should set aside at least 10 minutes to read it so that they can take advantage of the program's options.

One annoying weakness with the program is that there is no way to bypass the beginning credits after each student's use. And the credits get rather tedious. Also, after a problem is answered correctly, it "sits there" for quite a while before the new one appears. We discovered that hitting RETURN hastened the process a bit.

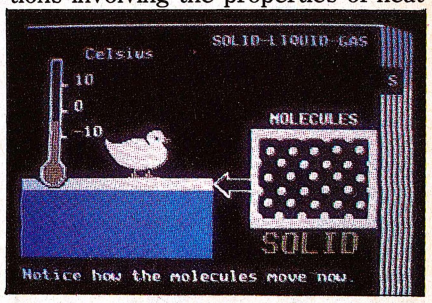
Price: $39.95
Policy: $10 backup; 30-day preview
Source: Weekly Reader Software, 245 Long Hill Road, Middletown, CT 96457; 203/347-7251
Barbara Devir, Fourth Grade Teacher
Woodside School, Peekskill, NY

EXPLORING HEAT

Computer: Apple II series
Topic: Science
Grade Level: 5–8

A duck is sitting on a frozen pond. Suddenly a message appears at the bottom of the screen: "Let's see what happens when the temperature rises." The simulated molecules in a box on the side of screen speed up their motion and, splash! The duck falls into the pond.

That's just one of the many situations involving the properties of heat



The computer simulates the movement of molecules.

that children experience in the *Exploring Heat* program. The program consists of six parts, five of which involve the use of two temperature probes (included with the program) that you hook up to the computer via joystick ports. Students use the probes to take temperature measure-

 Circle 24 on Reader Service Card.

ments of various objects.

Included with the program is a booklet that provides 10 lesson plans for using the program in the science classroom. The entire package is actually designed as a supplement or replacement for the chapter on heat in the level (grade) 5 *Heath Science* and the 7th and 8th grade *Heath Physical Science* texts. But any science class that needs a visual simulation of thermometers would benefit from its use; the second grade teachers in my district will attest to that!

The first part of the program is called MOLECULE WINDOW. The screen displays a thermometer as well as a box that presents an animated simulation of moving molecules. The student is told to stick the computerized probes in water of varying temperatures. As the student does this, the probes register temperature changes that appear on the thermometer on the computer screen. The molecules on the screen speed up or slow down accordingly.

The next part is THERMOMETERS, which displays temperature readings received from the probes in the form of bar graphs. The bar graphs are in the shape of a thermometer, and may be printed out.

TEMPERATURE SKETCH creates line graphs that can keep track of temperature changes over an extended period. As the probes are moved to different temperatures of water, the temperature readings are automatically registered on the screen graph. These graphs can be printed out, provided that your computer is fitted with a Grappler+ interface card and a compatible printer. (If not, students can copy the graphs from the screen.

The vocabulary introduced in the program is visually illustrated in the DICTIONARY ENTRIES section. After students have learned the vocabulary, they may take two quizzes that give the user challenging questions on the new words.

A game called TEMPERATURE RACER is also included. It is a simulated ski race, where competitors must change the temperature of their probe to guide their "skier" through racing gates.

(continued)

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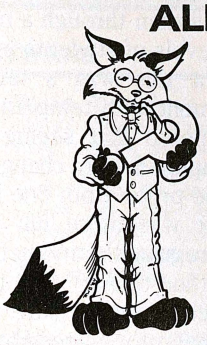

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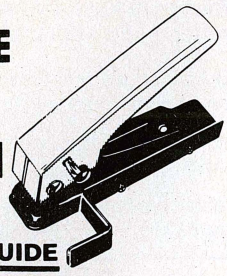

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SOFTWARE SHOWCASE

(continued from page 55)

Exploring Heat encourages students to learn about heat energy by doing, observing, keeping notes, and comparing results with others. Students will probably come up with their own ideas of testing after using the program at least once.

Teachers will find this way of exploring heat much more stimulating for the students than through a mere textbook. All levels of students in my district thought this was a terrific way to experiment with temperature change; they noted that seeing the computer's graphic display change as they moved the probe from one beaker to another was more fun than trying to read regular thermometers.

Calibrating (fine-tuning) the temperature probes to make sure that they read temperatures accurately, and making individual disks for student use, are both necessary and time consuming, but the manual very clearly explains how to do each step.

It is absolutely mandatory that you caution students about the use of liquids near the computer because several of the lesson plans require that hot or cool water be on hand. Putting the computer on a desk that's higher than the water is a good idea.

Price: $150
Policy: Backup included; 30-day preview
Source: D.C. Heath, 125 Spring St., Lexington, MA 02173; 617/862-6650

Ann Dana, Computer Consultant
District 181, Hinsdale, IL

SHAPE STARSHIP

Computer: TRS-80 III/4, Apple II series, Commodore 64/128
Topic: Shape and pattern recognition
Grade Level: Preschool–kindergarten

The telescope and spaceman that appear in each of the four lessons of *Shape Starship* are used to search the universe for more than undiscovered planets or new civilizations in space. Their mission is to help children identify shapes.

To play the program, a child decides which of three shapes on the screen completes the sequence or matches the figure located in the top right corner of the screen. The child then points the telescope at it. The spaceman smiles and nods his head "yes" if he or she chooses the correct answer. If the answer is incorrect, the spaceman shakes his head "no" and the incorrect answer disappears. The student must keep trying until the correct answer is chosen.

In the first two lessons, the child must choose a shape that is an identical or almost identical match to a shape located in the top right corner. (An example of an almost-identical match might be two objects of the same shape, but of different sizes.)

In the third lesson, a sequence of shapes appears on the screen, and the student must choose the shape that correctly completes the sequence. For example, if the screen shows this incomplete shape sequence: moon, triangle, triangle, moon, triangle; the final shape should be a triangle.

The fourth lesson involves a shape and picture matchup. The picture in the top right corner of the screen is composed of a shape. The student chooses the shape that matches the one incorporated in the picture.

Each lesson has 12 challenges, and at the end of each lesson a score screen appears showing the student how he or she did. The score is kept with rocket graphics. A rocket taking off indicates that a challenge was answered correctly on the first try; a rocket still on the launch pad represents each challenge that was answered incorrectly the first time.

The children in my kindergarten class found *Shape Starship* very easy; I believe the program is better suited for students in preschool. I also found the lack of color and absence of sound effects for the spaceman's response in the TRS-80 program to be disappointing. *Shape Starship* does, however, fulfill its objective of teaching children to identify shapes and recognize simple shape patterns.

Price: $39.95
Policy: $15 backup; 30-day preview
Source: Gamco Industries, Inc., Box 1911, Big Spring, TX 79721; 915/267-6327

Cyndi Heller, Computer Coordinator
The Bentley School, Oakland, CA ■

Circle 27 on Reader Service Card.

CURRICULUM PLANNER

WHERE TO USE SOFTWARE IN THE CURRICULUM

This month computer consultant Shiela Swett suggests software programs that can be incorporated into language arts curricula for grades two through four. Shiela has charted her software recommendations according to specific language skills that the programs help develop.

The empty boxes at the far right of her chart let you include software recommendations of your own.

For the addresses of the publishers mentioned in this chart, see page 58.

SECOND–FOURTH GRADE LANGUAGE ARTS

SKILLS	RECOMMENDED SOFTWARE			SCHOOL–OWNED SOFTWARE
WORD ATTACK	**Word Munchers** (MECC). Players munch words (Pac-Man style) that match target vowel sounds. Top level includes *oi, ou, au,* vowels + *r,* and the classic rule breakers. Fun! For Apple II series. $49.	**Word Detective** (Sunburst). Students make as many words as they can from a group of seven letters. Then the computer shows any other possible words. Makes a great two-person competition. For Atari series. $59.	**Snoopy's Skywriter Scrambler** (Random House). Snoopy gives a challenge word, then players make smaller words using those letters. Students can enter their own words, too. For Apple II series, Commodore, PET. Approx. $39.95.	
READING FOR MEANING	**Kittens, Kids, and a Frog** (1-2) and **Chariots, Cougars, and Kings** (3-4) (Hartley). Players read stories, then answer multiple choice questions to identify details, predict outcomes, and draw conclusions. For Apple II series. $39.95.	**M-ss-ng L-nks** (Sunburst). A passage from one of nine children's classics (ie: *The Wind in the Willows*) appears, with some letters left out; kids fill in the blanks. For Apple II series, Atari series, Commodore, IBM PC/PCjr, TRS-80 series. $59.	**Word Ladders** (Hartley). Players use word clues to change one letter of a given word and make another. Students can add their own words, too. For Apple II series. $35.95.	
VOCABULARY	**Word Master** (DLM). Players use electronic rays (arcade-style) to zap target word's antonym, synonym, or homonym. Three levels of difficulty. For Apple II series, Atari series, Commodore, IBM PC. $44.	**Wizard of Words** (Advanced Ideas). Five word games involving a juggler, knight, princess, friendly dragon, and heralds develop reading and spelling skills. For Apple II series, Commodore, IBM PC/PCjr. Approx. $39.95.	**Square Pairs** (Scholastic). Players match words with themselves, a synonym, an antonym, or other related form—in Concentration-game format. For Apple II series, Atari series, Commodore. $39.95.	
SPELLING AND GRAMMAR	**Tic Tac Spell** (SouthWest EdPsych.). Students play tic-tac-toe by remembering and spelling correctly the word that appears briefly in one of the nine squares in the box. For Apple. $34.99.	**Word Invasion** (DLM). Students study six main parts of speech. Ms. Octopus grabs words when students make incorrect parts-of-speech matchups. For Apple II series, Commodore, Atari series, IBM PC. $44.	**Goofy's Word Factory** (Walt Disney). Players earn words by identifying parts of speech. They then write stories using the earned words. For Apple II series. $49.95.	
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RELATED UTILITY PROGRAMS	**Magic Slate** (Sunburst). Simple word processor in which teachers use kids' writing, grammar text, story starters, etc., to teach proofreading and editing skills. For Apple II series. $89.95.	**Crossword Magic** (Mindscape). Students (or teachers) create crossword puzzles. Great way to review or increase vocabulary on any subject. For Apple II series, Atari series, Commodore, IBM PC/PCjr. $49.95.	**Print Your Own Bingo** (Hartley). Teachers can create many varieties of Bingo cards that develop reading, vocabulary, and sight word skills. For Apple II series. $49.95.	

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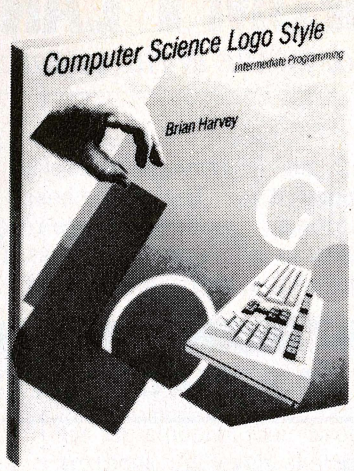

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Circle No.	Advertiser	Page
25	C&C Software	55
27	FCIC	56
12	Field Publications/ Weekly Reader	2
14	Grolier	6
16	Hartley Courseware	11
30	Heartsoft	CVR IV
20	Junior Software	50
11	Logo Computer	1
23	Midwest Software	54
28	MIT Press	58
26	NPS	56
15	Scholastic Computing	12
17	Scholastic/Microcomputer Instructional Materials Catalog	19
18	Scholastic/*Microzine*	37
19	Scholastic/Talking Text Writer	44
24	Sensible Software	54
22	Tom Snyder	53
29	Spinifex	CVR III
13	Springboard	5
	T&C Products	8

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NOTE TO PARENTS

FIVE QUESTIONS ABOUT COMPUTER EDUCATION

Dear Parent :

Parents often tell me they would like to know more about computers and computer education so that they can follow what their children are doing in school. Below are some of the most common questions parents ask about our work with computers. Perhaps the answers to these questions will be helpful to you, too.

1. **Why should my child learn how to operate a computer?**

By the time your child reaches adulthood, almost every kind of job will be affected by computers. The computer is also a very powerful teaching tool. It can help give your child a good education.

2. **How do students use computers in school?**

Students use computers to help them learn basic subject matter. Sometimes they use software programs to learn new skills in subjects like math and reading. Sometimes they use programs to drill themselves on skills they have already learned, but need to practice. One of the best ways for students to use computers is as a tool. This includes using word processing software to help make writing easier; using data bases to store and obtain large masses of information; and using special software and hardware to create art and music.

3. **Will using a computer make my child smarter?**

No one can claim that it will raise your child's IQ score, but using a computer provides an opportunity to use an extremely powerful learning tool.

4. **What computer model does my child use in school?**

_____

_____

5. **What software programs will my child be using during the next few months of school?**

_____

_____

I would be glad to answer any other questions you might have on how we use computers in school. Please feel free to contact me by phone or letter. Better yet, make an appointment to drop by the school for a visit. Your child and I will give you a firsthand computer demonstration!

Sincerely,

P.S.

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TEACHER'S HELPER

PROGRAM CONVERSIONS AND WORKSHEET ANSWERS

PROGRAM CONVERSIONS

Some of the program listings in this issue of *Teaching and Computers* only work on specific computer brands and models. Here are step-by-step instructions for adapting these listings for use on other brands and models.

LETTER GETTER (page 20)

For each brand of computer listed below, substitute the lines given for the corresponding lines in the IBM program listing.

Apple II Series

```
10 DT=150
30 HOME:POKE -16368,0
40 CH=INT (RND(1)*26)+65
50 HTAB INT(RND(1))*38)+2:VTAB 24
70 P=PEEK(-16384)-128
80 IF P<>CH THEN 110
90 HOME:SC=SC+1
130 HOME:POKE -16368,0
```

Atari Series

```
10 OPEN #1,4,0,"K:":POKE 752,1:DT=50:DIM Z$(5)
30 P=0:PRINT CHR$(125)
40 CH=INT(RND(0)*26)+65
50 POSITION INT(RND(0)*38)+1,23
70 IF PEEK(764)<>255 THEN GET #1,P
80 IF P<>CH THEN 110
90 PRINT CHR$(125):SC=SC+1
130 PRINT CHR$(125):CLOSE #1
```

Color Computer

```
10 DT=150
40 CH=RND(26)+64
60 PRINT@RND(30)+480,CHR$(CH);:I=23
```

Delete line 50.

Commodore 64/128

```
10 DT=150
30 PRINT CHR$(147)
40 CH=INT(RND(1)*26)+65
50 POKE 214,23
60    PRINT:PRINT    TAB(INT(RND(1)*37)+2);CHR
$(CH);:I=24
70 GET K$
90 PRINT CHR$(147):SC=SC+1
130 PRINT CHR$(147)
```

TRS-80 Series

```
10 DT=150
40 CH=RND(26)+64
60 PRINT@RND(63)+960,CHR$(CH);:I=23
```

Delete line 50.

MATHE-MAGIC (page 22)

For all machines that follow, delete line 1 of the Atari listing. Then make the following individual changes.

Apple II Series: Change PRINT CHR$(125) to HOME in line 10.

Commodore 64/128: Change PRINT CHR$(125) to PRINT CHR$(147) in line 10.

IBM PC/PCjr, Color Computer, TRS-80 Series: Change PRINT CHR$(125) to CLS in line 10 and change PRESS RETURN to PRESS ENTER in line 30.

DOLLAR WORDS (page 23)

For each brand of computer listed below, substitute the lines given for the corresponding lines in the Commodore listing.

Atari Series

```
10 PRINT              CHR$(125):CLR:DIM
W$(100),Z$(1),SUM$(100),C$(100)
50 FOR X=1 TO L:C$=W$(X):C=ASC(C$)
1020 IF L=1 THEN SUM$(LEN(SUM$)+1)=".00"
1030 IF L=3 AND VAL(SUM$(2))<1 THEN SUM$(LEN-
(SUM$+1)="0"
```

Delete lines 1040 and 1050.

Apple II Series

```
10 HOME:CLEAR
```

Color Computer, TRS-80 Series

```
10 CLS: CLEAR 1000
80 SUM=V*.01
90 PRINT:PRINT " ";W$;" IS WORTH: $ ";:PRINT USING
"##.##";SUM
```

Delete lines 1000 to 1060.

IBM PC/PCjr

Make sure the CAPS LOCK key is down when entering and running the program.

```
10 CLS: CLEAR
80 SUM=V*.01
90 PRINT:PRINT " ";W$;" IS WORTH: $ ";:PRINT USING
"##.##";SUM
```

Delete lines 1000 to 1060.

BACK-TO-SCHOOL NEWS QUIZ (page 23)

The following changes are based on the Apple program listing.

Commodore 64/128: Change HOME to PRINT CHR$(147) in lines 20 and 130. Note that all DATA statements must be less than 80 characters.

IBM PC/PCjr, Color Computer, TRS-80 Series: Change HOME to CLS in lines 20 and 130. Change PRESS RETURN to PRESS ENTER in lines 80 and 120.

ANSWERS TO POSTER WORKSHEETS

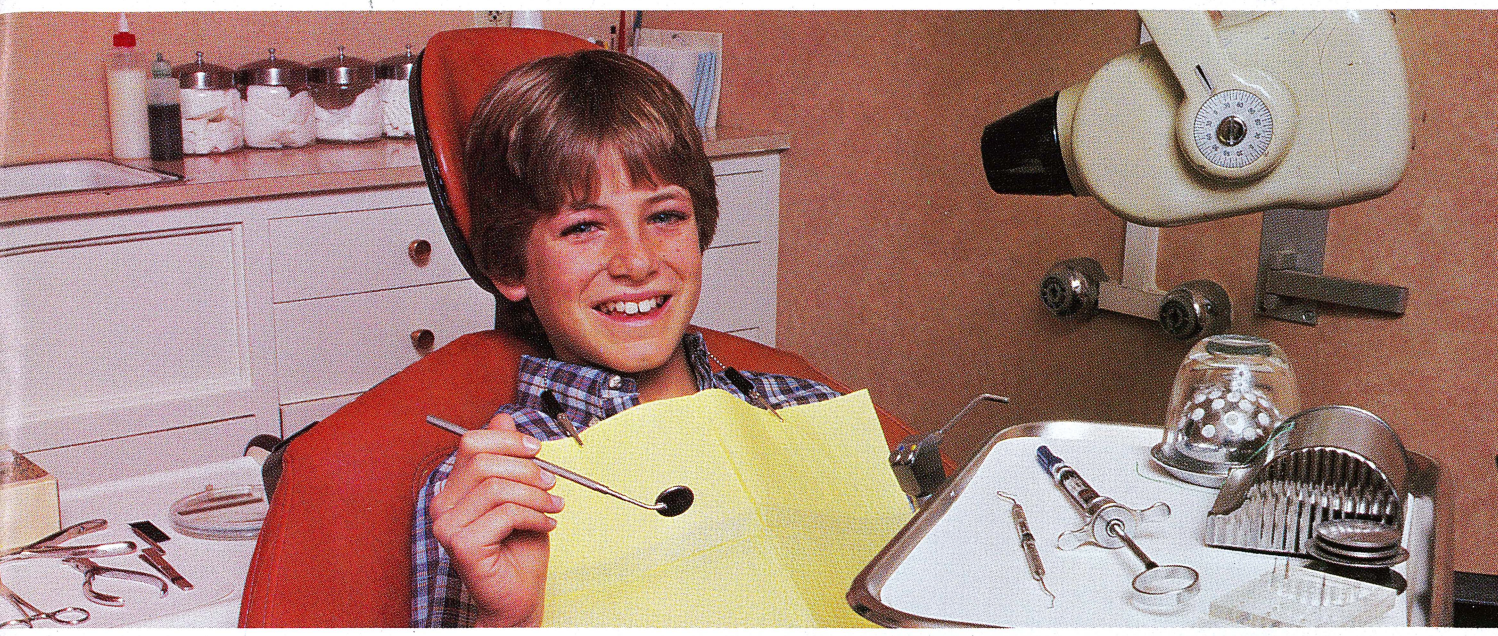
Primary #1: There should be Xs on the joystick, keyboard, graphics tablet, the touch-sensitive screen, and disk drive.

Primary #2: The input devices are, from top to bottom: keyboard, graphics tablet, joystick, light pen, mouse, disk drive.

Intermediate #1: The answers are (1) touch sensitive screen; (2) mouse; (3) joystick; (4) disk drive; (5) voice recognition system; (6) modem; (7) keyboard.

Intermediate #2: The answer to the riddle is: Because his bark is worse than his byte.

Johnny isn't afraid of the dentist. But he thinks math is a real pain.



Johnny's not alone. Most kids would rather be doing anything—as long as it's not a math problem.

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If fact, you'll be frightened by how much they start enjoying math.

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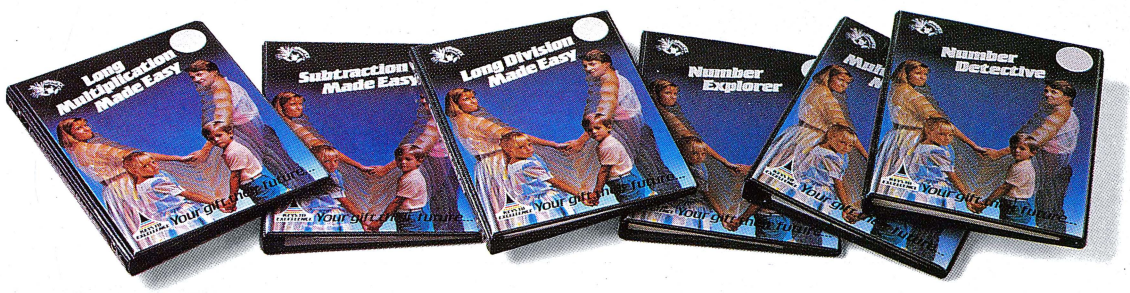

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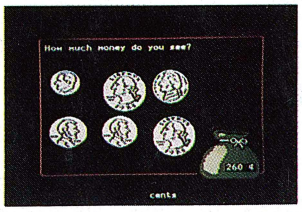

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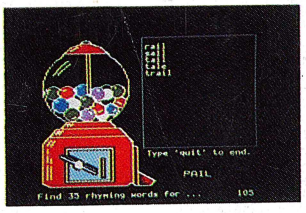

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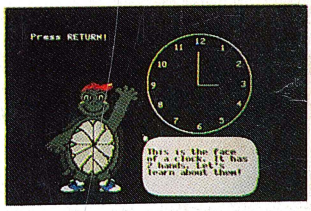

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